THE EFFECT OF INFORMATION TECHNOLOGY ON COMPETITIVE ADVANTAGE IN LIBYAN OIL COMPANIES: A CONCEPTUAL MODEL FOR TARGETING STRATEGIC INFORMATION SYSTEMS INVESTMENT

BY

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A Thesis Submitted in Partial Fulfilment of the Requirements of the University of Abertay Dundee for the Award of the Degree of Doctor of Philosophy

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I certify this thesis is the true and accurate version of the thesis approved by the examiners.

Signed [redacted].....

Date.....4.....1.....13.....

I, Mabroka Abdalla Ahdidan, confirm that the work presented in this thesis is my own. Where information has been derived from other source, I can confirm that this has been indicated in the thesis.

Signed.....  .....

Date ...04..11...13.....

DEDICATION

This thesis is dedicated to my late mother to whom

I am forever grateful

I also dedicate this thesis to my loving five fingers, my

daughters

Shhed, Shima, Raghed, Nagia, and Rahaf

Who never failed to give me their wonderful love and support

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ABSTRACT

This thesis focuses on the significant effect on business performance as a result of the dynamic connection between information technology (IT) strategy and business strategy. After an extensive review of the relevant literature, the important dimensions of the content and process domains of IT strategy and business strategy were identified and operationalised. Consequently, a conceptual model is developed to explain the structural relationship between IT strategy, business strategy and business performance. A Questionnaire survey was used as the main data collection tool within all the local oil companies in Libya.

The main findings of this research indicate that the position in the company does have an effect on views regarding the concept of business strategy/IT strategy, content of business strategy/IT strategy, and the process of business strategy/IT strategy. This is clearly an important factor to achieve their goals because IT strategies are a powerful source of competitive advantage. This study has made a contribution to knowledge, it raises and improves the understanding of the effect of IT on competitive advantage in Libyan oil companies and developed a model that pays attention to the content and process of dimensions of IT strategy and business strategy. This model can be used by Libyan oil companies and other companies in developing countries when using IT strategy and business strategy in their information systems investments.

CHAPTER ONE

INTRODUCTION

3.1 Purpose of the Study

The purpose of this research is to examine IT and business strategies used in Libyan oil companies to find how these strategies affect their business performance and to develop a conceptual model for targeting strategic information systems investments. However, Libyan oil companies are still at the beginning use of IT and they are trying to reach the best level of IT use to improve their systems. Also there is a lack of knowledge on IT strategy and how it can be used to improve the position of the company, the use of the different IT approaches and models to align IT and business strategy to achieve competitive advantage. Therefore, this study tries to help these companies to solve these problems.

3.2 Background of the Study

Information systems can play an important role in organisations in assisting creativity, innovation, and development of new products and services. They help to exploit and even create new markets, and strengthen competitive positions by strategically aligning Information Technology (IT) into core business processes and functions (Melkawy, 2002, Duhan et al., 2001, Porter, 2004, Hemmatfar et al., 2010, and Faryabi et al., 2013). However, technology itself is a competitive factor of change. The competitors stay at the same level of competitive advantage when they have a stable level of technology. But when technology changes, opportunities exist

for companies to build ahead and gain advantages especially when they are early adopters (Nicholas, 2004 and Faryabi et al., 2013).

Information systems strategy is an important issue facing IS managerial and academic researchers (Albert and Varun (1999), Basu et al. (2002), Earl (1993), King (1995), Lederer and Sethi (1996), Li and Chen (2001), and Teo and Ang (2000). It has become an increasingly important issue of the research in strategic management and information technology (IT). Hence the organisations see the strategic use of IT as an essential factor to gain competitive advantage (Faryabi et al., 2013).

The aim of this study is to investigate the strategic uses of IT within Libyan oil companies, to find the important IT strategy variables and business strategy variables, and then establish the relationship between them. The importance of this study lies in that it tackles a crucial subject; connecting information systems with the competitive advantage of Libyan oil companies that are the main source of the country's revenues. The oil sector in Libya provides crude oil export which is considered the most important sector of the economy.

Libya was considered as a poor country in natural resources and severely limited because of its desert environment. The economic situation of Libya changed after the oil discovered in the late 1950s in the south of Libya in Fezzan (Mohamed et al., 2010), it became one of the main oil producers and changed its economy from a poor

country to a rich country by the year of 1965 (Mohamed and Russell, 2003). The oil sector became the main supply of Libya's revenue and improved the other sectors such as agriculture, industry and services. By 1965, Libya was the sixth largest country in terms of global oil production (Gannous, 1999). However, due to the current political crises, Libya is currently ranked as the 17th in terms of oil and gas production (World Fact Book, 2011). In 2013 Libya become one of the main reserves among African countries, with an estimated 48 billion barrels of proven oil reserves, and hopes to increase its oil reserve estimates through additional exploration. Libya joined OPEC in 1962 and became the fourth largest oil exporter among the OPEC countries in 1969 (The Arab Petroleum Research Centre, 2004).

The industry sector in Libya is still in the early stage and use of technology. It is very dependent on the technology transferred from foreign countries. They adopted the transferred technologies that related to the technology need of Libyan Oil Sector (LOS). The technology that is transferred from these countries should be suitable for the Libyan environment and can be helped and improved by the Libyan oil companies effectively (Mohamed et al., 2010). In addition, the foreign experts played an important role in the establishment of Libyan Oil Sector (LOS) in the first stages to achieve the goals of technology transfer. Libyan oil companies used IT to manage and improve their business in different tasks such as production, sales and distribution, inventory and material management, plant maintenance, finance and human resource management.

3.3 Research Problem

The challenge for the majority of companies nowadays lies in the fast changes in the business sector, resulting from different factors like the great increase of the information and communication systems, and the role which globalisation and free trading play in varying the taste and desire of the consumers and open markets. These factors and changes will put pressure on most business institutions. However, the effectiveness will differ from one sector to another. The nature of the oil industry and working in a more dynamic environment affects many factors, making this sector highly competitive. Information systems also play an important role in organisational existence through its impact on the business performance that it is significant in the financial performance in the company. Libyan oil companies are still in the first view and use of IT in their industry sectors. There is a lack of understanding in how to use IT strategy and business strategy amongst the managers in these companies. Also they do not know exactly how to use the planning approaches and the different methods of IT which can help their companies to change their position and increase their performance. The level of IT knowledge in these companies is in the beginner level comparing with the improvement and fast change in the technology nowadays. Therefore, this research is trying to investigate and exam some of these problems that relate to how IT in Libyan oil companies affect business performance in relation to achieving competitive advantage.

3.4 Research Aim and Objectives

The aim of this research is to investigate the strategic uses of IT within Libyan oil companies, find the important IT strategy variables and business strategy variables and then establish the relationship between them. In line with the aim of the study, the main objectives of the study are:

- To examine the use of business strategies (BS) in Libyan oil companies by identifying the significant BS used in these companies;
- To examine the content and process dimensions of business strategy used in Libyan oil companies;
- To evaluate the use of information technology strategies (ITS) in Libyan oil companies by identifying the significant IT strategy used in these companies;
- To analyse the content and process dimensions of IT strategy used in Libyan oil companies;
- To explore the important IT strategy variables and explore the important BS variables;
- To discuss the relationship between IT strategy and business strategy;
- To propose ways of how information systems can achieve a competitive advantage for the oil companies in Libya;

And

- To develop a conceptual model that may help Libyan oil companies in their business in the future.

3.5 Research Questions

In order to achieve the research objectives the following questions have to be answered:

1 What business strategies are used in Libyan oil companies and how are they used in these companies?

2 What are the significant content and process dimensions of business strategy used in Libyan oil companies?

3 What IT strategies are used in Libyan oil companies and how are they used in these companies?

4 What are the significant content and process dimensions of IT strategy used in Libyan oil companies?

5 What are the important IT and business strategy variables in Libyan oil companies?

6 What is the relationship between IT strategy and business strategy in Libyan oil companies?

7 Does IT strategy and business strategy affect business performance in Libyan oil companies and what is the direction of the impact of IT on business performance?

3.6 The Significance of the Study

The importance of this study lies in the fact that it tackles a crucial subject; connecting information systems with the competitive advantage of Libyan oil companies that are the important supply of Libyan economy. Libya is dependent on the oil sector that has been the government major economic objective. To the best of my knowledge this is the first research study investigating IT and competitive advantage in Libyan oil companies. It also makes several contributions in this sector especially in the Libyan oil companies. It identifies an important IT and business strategy, important IT and business strategy variables and develops a conceptual model that explains the impact of IT strategy and business strategy on business performance in Libyan oil companies. This model may help these companies in their business in the future.

3.7 Scope and Approach of the Study

The scope of this research covered all the oil companies in Libya. It involves 96 managers from top to middle management level. It included all the top managers, all IT managers, all finance managers and other managers in the middle level of these companies. The other managers in the middle level were chosen from the managers who are working in positions of using business strategy or IT strategy directly or having responsibility in the decision making process that is related to IT strategy or business strategy. A positivist approach is deployed in this research because of different advantage such as it is based on belief that the methods and the practices of

natural scientists can be applied to behavioural studies and theories relating to organisational change and psychological contract (Easterby-Smith et al., 2008). The positivism approach can provide a methodology with high structure that can facilitate replication, and it depends on quantifiable observations that allow the researcher to undertake a statistical analysis that is based on the collection of quantifiable data (Collins, 2010).

In conducting the research the quantitative method was selected. It is used because of the following reasons: 1) this method is usually based on numerical collection and analysis of data using questionnaire as an instrument (Gay and Airasian, 2003), 2) It seeks to gather numerical data using statistical analysis, 3) it helps to determine the extent to which there are differences between the data, 4) this study collected data through the use of questionnaires and used statistical tests to analyse the data. The study aims to assess and analyse the relationships between variables (Cohen et al., 2013). This method emphasises the testing of theory by using numerical quantification in data collection and analysis (Punch, 2005). This makes the quantitative approach appropriate to be taken as this study's approach. The quantitative method enables the researcher to survey a large sample of population within a relatively short time frame. A total of 96 questionnaires were distributed and 91 questionnaires were returned which gave a high response rate of 94.79%.

3.8 The Structure of the Thesis

This thesis is organised into nine chapters as follows: The current chapter provided an introduction about the research topic and determined the research problem, research questions, aim, objectives, scope and structure of the thesis.

Chapter two is devoted to the review of literature on the Libyan context, including a general background about the country and its social, political, legal, technological and economic context. It also deals with the Libyan oil and gas sector in general and Libyan oil companies in particular.

Chapters three, four and five are devoted to a review of the literature on IT and business strategy. Chapter three addressed the importance of IS strategy. It reviewed the IS strategy approaches used in the literature, the problems and objectives of these approaches, then it moved on to evaluate these approaches as discussed in the literature.

Chapter four proposed the second variable of this research which is competitive advantage meaning, importance and how to gain competitive advantage. Then the chapter moved on to review competitive advantage models followed by the evaluation of these models as found in the literature.

Chapter five linked the two variables of this research IT with competitive advantage. It started by the meaning of IT and the importance of IT, then the growth of IT followed by an explanation of how IT can affect competitive advantage and how IT can help to achieve competitive advantage.

Chapter six discussed the research methodology and method and justifies the selection of the research approach and method that are adopted in this study. This thesis used a positivist approach; the research methodology considered in regard to quantitative methodology. In respect to research methodology the researcher considers the tool for collecting data for this study is questionnaires.

Chapter seven centred on the analysis of data, presenting the finding and results of a questionnaire survey. An attempt is made to construct the data around the concept of IT and business strategy and the dimensions of business strategy and IT strategy-content, and process.

Chapter eight devoted to discussion, the key issue of this chapter being to review the findings of the previous chapter, in the light of the literature reviewed in this thesis.

Chapter nine concluded the whole thesis, with a summary of the main findings, a reconsideration of the research objectives, a discussion of the limitations of the study and making recommendation for further research.

CHAPTER TWO

LIBYAN BACKGROUND

2.1 Introduction

The study of social, political, legal and economic contexts is vital for an understanding of the country structure and practices of its business environment, organisation and management. Hence, this chapter provides an overview of Libya's social-economic and political context as well as a review of its oil sector. It is divided into nine sections as follows: Section 2.2 provides a brief discussion of the geography and population of Libya. Section 2.3 focuses on the country's political history. The industrial and technological environment is discussed in Section 2.4. In Section 2.5 the Libyan oil industry is discussed. Section 2.6 focuses on the National Oil Corporation (NOC) and section 2.7 provides an overview of oil companies. Section 2.8 explains the contribution of the oil industry to Gross Domestic Product (GDP) and section 2.9 concludes the chapter.

2.2 Geography and Population of Libya

Libya is located in north central Africa and is 1,759,540 square kilometres in extent. It stretches from the Mediterranean in the north to the vast Sahara in the south. It has boundaries with Tunisia and Algeria in the west, Egypt and Sudan in the east, Niger and Chad in the south and the Mediterranean coast in the north. It is the fourth largest country in Africa and the seventh largest country in the world (U.N. Demographic Yearbook, 2012). It is approximately one-half the size of Europe and

seven times bigger than Great Britain. Most of the land (90%) of the area in Libya is desert or semi-desert, consisting of sandy areas and two areas of hills and mountains rising to a maximum of 3,000 feet above sea level (Saad et al., 2011).

The population of Libya is approximately 6.5 million people (United National Secretariat, 2010). The majority of these people are heavily concentrated in the two largest cites, Tripoli and Benghazi (more than third of this population) (Oxford Business Group, 2010). Although the dominant group is Arab, Libya is also home to other groups such as Berber tribes that include Amazigh and Touareq. Moreover, Libya has different foreign nationals including Greeks, Maltese, Egyptians, Turks, and others (Oxford Business Group, 2010).

The Arabic language is the mother tongue of the majority of people in North Africa and Middle East countries and the main and official language used in Libya is Arabic. In addition to Arabic, English and Italian are also spoken in the main cities which are often spoken in business. The main religion in Libya is Islam; about 97 per cent of Libyans are Muslims. The majority of Muslims in Libya adhere to the Sunni branch. There is a small community of Christians, mainly Coptic Orthodox Christians (World fact book, 2013).

2.3 Political History of Libya

Libya has undergone three stages in its political history: from 1951 to 1969, under the Gaddafi Government (September 1969 to the 2011 revolution), and since the revolution of 17 February 2011 (2011to date).

First, from 1951 to 1969, Libya was a federation of three distinct regions: Cyrenaica in the East, Tripolitania in the West, and Fezzan in the South. At the end of 1951 Libya declared its independence as the United Kingdom of Libya, under King Idris As-Senussi. During this period the political system was a very limited parliamentary democracy with a Senate (upper House) and a House of Representative (Lower House). The Senate consisted of twenty four members. The King chose the eight members and the others (sixteen) were chosen by the legislative councils of provinces. The King chose the executive authority - the Prime Minister and Council of Ministers. These ministers were responsible to the Chamber of Deputies (Esposito, 1998). In 1963, the country was transformed from a federal into a unitary state with a central Government. There were now ten new regions each one was ruled by an appointed governor (Oxford Business Group, 2010).

Second, Libya under Gaddafi's government (1969-2011), on first of September 1969 a small group of military officers led by Moamer Al Gaddafi revolted against the King's government. They changed the King and established the Revolution Command Council (RCC) and proclaimed Libya as an Arab Republic (Vandewalle, 2012). Gaddafi led Libya on a path of Arabisation and Islamisation to obtain popular

support and legitimacy for the 1969 revolution. In 1973, Gaddafi created the "People's Committees" to encourage people to participate in political life and run local and regional governments. At the same time Gaddafi appointed a new government called the People's Authority which was based on direct democracy. In the middle of the 1970s Gaddafi published his Green Book. It was a summary of his thinking and philosophy on the political, economic, and social system of the country. On 2 March 1977 Libya was renamed the Socialist People's Libyan Arab Jamahiriya when the new political structure was introduced. The new legislative and executive authorities were the decentralised Basic People's Congress (BPCs) and People's Committee (PC). BPCs were founded in each area across the country and everyone aged 18 years and over in all cities was required to participate through direct consultation and consensus in their local BPCs. Each BPC consisted of two parts, - an administrative committee (secretariat of conference) and an executive committee (PC). These implemented the decisions and recommendations of the BPC. All the BPC members were also members of the General People's Congress (GPC) who constituted the highest legislative authority in the place of the RRC. As Porter and Yergin (2006) recount, this political system faced many difficulties and problems such as the change in the implementation of the system through continued restructuring of its political system. In the last three decades, there were different adoptions which tried to move the political system towards decentralisation, for example the introduction of communes and administrative divisions. In 2000 they tried to devolve more power to the local level, by reducing the number of ministries

to five, and turning the others into consultative bodies. The difficulties facing the Libyan political system have manifested in large numbers of administrative problems such as an excessive bureaucracy and an absence of accountability because the organisations are not accountable.

Third, Libya after 17th February 2011 revolution, followed the example of Tunisia and Egypt it sparked radical change in Libya, starting in Benghazi, the second largest city in Libya. The revolution changed the political system in Libya and introduced the new face of Libya's freedom. The National Transitional Council (NTC) was established to steer the revolution. By 23 March 2011, it had become the interim governing body and was recognised by 100 countries as the rightful representative of Libya (Council on Foreign Relations, 2011). The NTC started to organize the new politics in Libya. On 3rd August 2011, it issued a Constitutional Declaration, announcing Libya as a democracy with Islam as its religion. Libya became a sovereign state with an independent judiciary The Constitutional Declaration gave rights to all Libyan people including freedom of religion and women's rights. Furthermore, it ensured transmission of Libya during the transition to a presidential republic with an elected National Assembly. The NTC also launched an interim democratic constitution. The NTC set up the Election Commission to conduct the elections to the Public National Conference (PNC). The PNC has chosen a new Prime Minister and assigned a Constituent Assembly to draft a Constitution within 60 days.

2.4 Technological Environment

Libya's current technology environment is very dependent on technology transferred by foreign companies from western countries which is then adapted to the conditions of the Libyan Oil Sector (LOS). These technologies are transferred such as suitability of technology for the Libyan environment, and the transferred technology can be assimilated and modified effectively to the Libyan companies (Mohamed et al., 2010). Foreign experts played an important role in the establishment of LOS in its early stages to achieve the goals of technology transfer. The development of education helped technological advancement too. Libyan oil companies are now using IT to help them manage their important functions such as production, sales and distribution, inventory and material management, plant maintenance, finance and human resource management (Shamia, 1995).

Research and development are considered by Libyan government and it has become a vital factor in the formation of the LOS. Libyan government enacted laws in 1970 to establish the General Organisation of Industry (GOI) and Industrial Research Centre (IRC), which are the governmental bodies concerned with both the executive and scientific roles in the LOS (LNOSR, 1996).

2.5 Libyan Oil Industry

Oil was discovered in Fezzan in the South of Libya in 1958 and exploration started in 1964 (Mohamed et al., 2010). Libya's economic problems were solved after this event but the exploration of oil started with the help of foreign companies. Three

years after the discovery of oil, the Libyan economy changed dramatically and oil production and export increased more than ten times in 1963. Libya changed from a poor country to a rich country since Libya became one of the main of major oil producers in the world (Mohamed and Russell, 2003). By 1965, Libya was the sixth largest country in terms of global oil production (Hallett, 2004). Moreover all other sectors of the economy were transformed and improved: agriculture, industry and services. Libya has the largest oil reserves in Africa (see Table 2.1 below), with an estimated 48.0 billion barrels (bb) of proven oil reserves in 2013 about 37.6% share of total Africa. It hopes to increase its oil reserve estimates through additional exploration.

Table 2.1 Estimated Proved Oil Reserves in Africa

Rank	Country	Proved reserves (bb), Jan. 2013	Proved reserves (bb), Jan. 2012	Share of Total Africa, Jan. 2013
1.	Libya	48.0	47.1	37.6%
2.	Nigeria	37.2	37.2	29.2%
3.	Algeria	12.2	12.2	9.6%
4.	Angola	10.5	9.5	8.2%
5.	Sudan	5.0	5.0	3.9%
6.	Egypt	4.4	4.4	3.4%
7.	Uganda	2.5	1.0	2.0%
8.	Gabon	2.0	2.0	1.6%
9.	Congo	1.6	1.6	1.3%
10.	Chad	1.5	1.5	1.2%
11.	Equatorial Guinea	1.1	1.1	0.9%
12.	Ghana	0.66	0.66	0.5%
Total Africa		127.6	1242	100.0

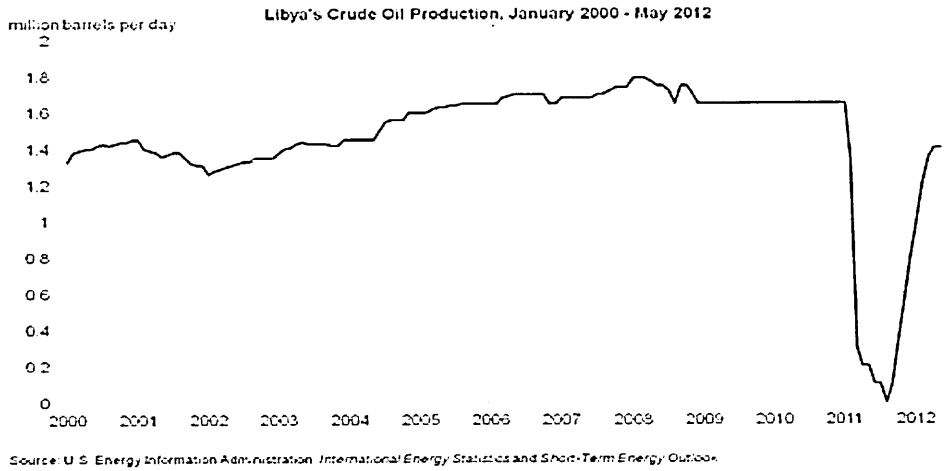
Source Worldwide Look at Reserves and Production. Oil and Gas Journal.Dec. 2012.

Libya became a member of OPEC in 1962 and became the fourth largest oil exporter among the OPEC countries in 1969 (Arab Petroleum Research Centre, 2004). The economic performance of Libya became heavily dependent on oil. The government has always given significant priority to the oil sector. They make it to have control over the other petroleum economies that were in the past run by the foreign companies (Gannous, 1999). Libya is an important exporter in oil and gas especially to European and American markets. In the last four decades, the oil industry's

development has become one of the most important events in Libya. Due to the current political crises, Libya is now ranked seventeenth in the world in oil and gas production (World Fact Book, 2012). The oil production during the last two years declined because of this political situation as shown in Figure 2.1 below.

Figure 2.1 Oil Production between 2000 to 2012 in Libya

Years	2006	2007	2008	2009	2010	2011	1012
Production (million)	1.720	1.845	147.000	1.790	1.789	479.000	1.509



As shown in Figure 2.1 above, Libya produced an average of 1.789.000 barrels of crude oil per day in 2010 and a change of 4% compared to 2009. In 2011 Libya produced just 479.000 barrels per day and it increased by 2012 to produce 1509.000 barrels per a day with a change of 215.1% compared with 2012. Libya's economy is

based on oil and exports contribute between 75% and 90% of State revenues (PB Statistic, 2013).

2.6 The National Oil Corporation (NOC)

The Libyan oil industry is controlled by the state-owned NATIONAL OIL CORPORATION (NOC), along with a small number of subsidiary companies that combined, account for around half of the country's oil revenues. The NOC was given responsibility for oil sector operations in 1970 after the oil companies became under the Libyan government after 1969 revolution. In 1979, it was recognized by the General sector under Decision No: 10/1979 to develop a national development plan. The main objective of that plan was to support the petroleum industry. The aim was to increase, develop, and exploit the oil reserves and to control the operation and investment in those reserves so as to realize optimum return.

2.7 Overview of Oil Companies in Libya

There are several international companies such as USA, UK companies working in Libya since 1995. They have exploration/production agreements with NOC. The first foreign company which started in 1977 producing oil in Libya is the Italian company, Agip-ENI. Exxon and Mobil, both US companies, started working in Libya in 1980 followed by other US oil companies such as Amerada Hess, Conoco, Marathon, Occidental and Grace which started and remained active until 1986. These companies came back in 1999 to visit their old oil facilities, with US government approval. In addition, in the middle of 2000, Libya invited more than 40

foreign oil and gas companies to discuss the agreement sharing licence for producing and exploring oil.

Currently, there are two different types of Libyan oil companies: upstream oil companies that produce crude oil and natural gas and downstream refining, service and marketing companies. The biggest oil producing companies are (in order of size) Waha Oil Company (WOC), Arabian Gulf Oil Company (Agoco), Zueitina Oil Company (ZOC) and Sirt Oil Company. The downstream oil firms are Azawia Oil Refining Company (ARC), Brega Marketing Company, Jowfe Oil Technology (JOT), and Ras Lanuf Oil and Gas Processing Company (Rasco). The oldest company is Waha Oil Company, (WOC), which was established in 1956 and based in Tripoli. WOC operates in different activities, including oil exploration, drilling, production, and shipping. This company has four fields, Waha, Gialo, Samah and Dahra. The second largest oil company is Arabian Gulf Oil Company (Agoco) which is based in Benghazi. Agoco was established in 1979 and is involved in the exploration, production and refining of crude oil and natural gas. They operate four oil fields and the biggest is the Sarir field. The Zueitina oil Company (ZOC), the third largest oil company, is based in Tripoli and was established in 1986. Finally Sirt Oil Company, located in Marsa El Brega, produces and explores oil and gas and is also engaged in manufacturing as shown in Table 2.2 below.

Table 2.2 Libyan Oil Companies

Companies	EST	Location	Field
Waha Oil Company (WOC),	1956	Tripoli	Waha, Gialo, Samah, and Dahra
Arabian Gulf Oil Company (Agoco)	1979	Benghazi	Sarir
Zueitina Oil Company (ZOC)	1986	Tripoli	Epsa and Joint Venture
Sirt Oil Company (SOC)	1981	Marsa El Brega	Raguba, Attahad, Assumud, and Marsa El-Brega
Azawia Oil Refining Company (ARC)	1976	Azawia	None*
Brega Marketing Company	1974	El Brega	None *
Jowfe Oil Technology (JOT)	1983	Benghazi	None*
Ras Lanuf Oil and Gas Processing Company	1983	Ras Lanuf	None*

*means these companies do not working in exporting the oil from the field
Adopted from: Literature Review

Regarding the management style in Libyan oil companies, popular management has been applied on a wide scale after the Peoples' Revolution of 1973 in most Libyan companies as well as in Libyan oil companies. The basic of this type of management is the Popular Committee which exists for the purpose of the realisation of society's objectives through the organisation. The Popular Committee's goal is realising the democratic systems in these companies. Thus, it is used in meaning of the realisation of society's objectives through the democratic management path (Gannous, 1999). The public sector companies also employed the Jamahiriya system as well as oil

companies. The employees in this system are members of the Producers' Congress which meets at less two times during the year. This group in the company elects the secretariat of this Congress as well as the People's Committee. The managing of the company is the responsibility of the People' Committee according to their role as a result the employees have the responsibility to manage their companies. Now days, Libyan oil companies are using the popular management system in managing their companies.

2.8 The Contribution of the Oil Industry to the Gross Domestic Product

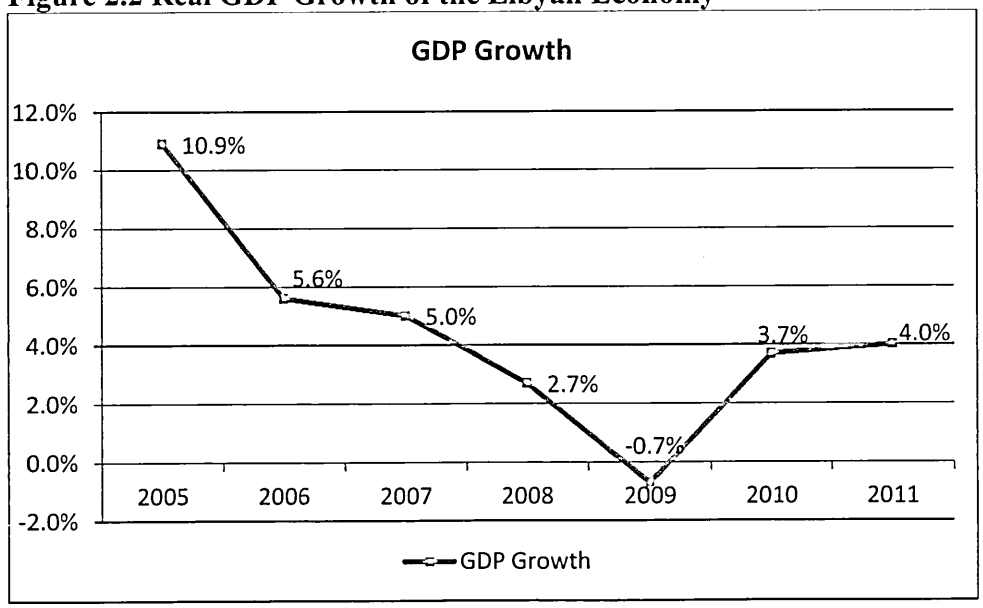
After the discovery of oil in Libya, the petroleum industry became the major source of revenue for the government budgets. The oil revenues derive from two different sources: firstly taxes paid by the company and royalties paid to the government, and secondly is payment for local production by the companies.

The growth of Gross Domestic Product (GDP) during the period between 1962 and 1969 changed steadily in relation to the contribution of the economics of oil sectors. The total of GDP increased during this period from 155.5 million Libyan Dinars to 1,223 million Libyan Dinars. The contribution of oil products to GDP rose between 1962 and 1969 from 24.4% to 61%. Meanwhile other sectors' contributions decreased in relative terms over the same period. The oil sector accounts for 92% of GDP, construction about 5%, agriculture 2% and manufacturing 1% (Central Bank of Libya, 1969). In the years from 1971 to 1980, there were changes in the contribution of oil products to GDP; the oil sector account was between 60% and

65% of GDP. However, after this time the price of oil fell and the oil market world started the period of glut. At the same time economic sanctions imposed by the UN and the US affected the Libyan economy and sparked deep-seated social and economic problems that required serious and concerted reform efforts (Ali, 2010). The oil products contribution to GDP decreased from 41% in 1985 to 23% in 1989 (African development Bank, 1995). In the 1990s, the economy of Libya improved because of the changes in the oil price: the oil products contribution rose to 30%. By mid-nineties the Libyan's GDP improved from 10,048,700 million Libyan Dinars to 2,468,000 million Libyan Dinars generated from oil revenues (Arab Monetary Fund, 1990, Arab Monetary Fund, 1993, African Development Bank, 1995). At the end of this period the oil sector's contribution to GDP declined from 14,285,800 million Libyan Dinars to 3,254,100 million Libyan Dinars. Indeed, the failure of the political and economic system in Libya to develop methods and mechanisms that could solve these difficulties and problems led to public dissatisfaction with such an economic philosophy. The GDP in Libya is the highest in the region but it was not distributed as fairly as it could be and that is why a million Libyan people live in poverty (Porter and Yergine, 2006). However, during the years from 2001 to 2005 there was a real growth in GDP because of the increase in oil revenues. GDP reached 4.6% in 2004 and 3.5% in 2005. After the US removed Libya from the list of countries sponsoring terrorism in 2006, oil production increased from 1.80 billion barrels per day (bpd) in 2006 to 2 million bpd by 2008 (Colijn, 2010).

Current economic indicators show that the Libyan economy is still dependent on oil revenues. The contribution of oil revenues to GDP amounts to approximately 70% and it generates more than 90% of government revenues and 95% of the export earnings (African Economic Outlook, 2010). Furthermore, the foreign trade and the foreign exchange earnings cover 60% of public sector wages (African Economic Outlook, 2010). As shown on Figure 2.1 below, the real growth of GDP slowed to -0.7% in 2009, but shot up after this year to 4.0% in 2011. This followed a drop in growth of 6% during the period between 2005 and 2008 (Colijn, 2010, African Economic Outlook, 2011:195).

Figure 2.2 Real GDP Growth of the Libyan Economy



Adopted from: African Economic Outlook, 2011. 'Libya'. P.195.

2.9 Summary

This chapter has discussed many aspects of Libyan context including geography, population, politics and technology. Libya is seven times bigger than Great Britain, the majority of people in this place are Arab with Islamic religion and Arabic language. Libya is a member of the Organisation of Petroleum Exporting Countries (OPEC). It holds the largest oil reserves in Africa and one of the major oil producers on the world. The government dominates Libya's economy through control of oil resources. The growth of Libya is characterised by its oil wealth and changing of its political systems, which grew during three different period with different systems based on democracy providing an alternative between western democracy after Libya had its freedom by 17th of February 2011 revolution.

Libya's technology environment is very dependent on technology transferred by foreign companies from western countries which is then adapted to the conditions of the Libyan Oil Sector (LOS). Libya's oil industry is run by the state-owned National Oil Corporation (NOC). Several international oil companies are engaged in exploration/production agreements with NOC. There are two different oil companies in Libya: upstream oil companies that produce crude oil and natural gas and downstream refining, service and marketing companies.

CHAPTER THREE

INFORMATION SYSTEMS STRATEGY

3.1 Introduction

Information systems strategy has been the major concern of IT professionals/ managers and researchers Segars and Grover (1999), Basu et al. (2002), Earl (1993), King (1995), Lederer and Sethi (1996), Li and Chen (2001), Teo and Ang (2000), and Chen et al. (2010). It has attracted a number of studies into strategic management and information technology (IT) but there has been little evidence that supports the suitability so far. This chapter provides an overview of the literature on IS strategy and an evaluation of IS approaches that have been suggested for the purpose of IS application within organisations. This chapter also encompasses the following issues: section 3.2 reviews the different definitions of strategy; section 3.3 investigates the dimensions of strategy; section 3.4 explains what IS strategy is and how it is defined in the literature; section 3.5 discusses the importance of the critical issue of IS strategy and the main objectives of IS strategy; section 3.6 examines the different approaches that have been used to develop IS strategy; section 3.7 reviews the evaluation of IS strategy approaches; section 3.8 outlines the criteria of these approaches and explains some significant reasons for the weakness of IS approaches as well explaining the ways in which these approaches help to enhance and achieve good results; section 3.9 reviews relevant studies in IS strategy; and section 3.10 provides a conclusion of the chapter.

3.2 The Definition of Strategy

The meaning of strategy has increasingly been discussed by researchers from a wide range of academic disciplines - economics, management, organisational behaviour, and other social science disciplines - thus being defined in many ways and from several perspectives. Porter (2004) defines strategy as a broad-based formula for how business is going to compete, what its goals should be, and what policies will be needed to carry out those goals. Mintzberg (1979) describes strategy as a mediating force between the organisation and its environment, and consistent with patterns of streams of organisational decisions to deal with the environment. He believes that strategy emphasises the need for organisations to obtain useful matches with their environment. Andrews (1987) sees strategy as a determinant of organisational purpose and notes the importance of stakeholders. According to Andrews (1987) business strategy is the pattern of various decisions in a company. This strategy determines and explores the goals, objectives, and purposes of this company, produces its policies and plans used to achieve these goals. Strategy is also defined as the various businesses the company intends to undertake. In addition, it outlines the future economic and human side of the business. Finally, strategy also shapes the monetary and non-monetary contribution the company desires to provide to all its stakeholders. Robson (1997) defines strategy as the pattern of resource allocation decisions made throughout an organisation. He encapsulates both desired goals and beliefs about what are acceptable and most critically, unacceptable means for achieving them. Johnson and Scholes (2006:3) also state that strategy is "*the*

direction and scope of an organisation over the long-term which achieves advantage for the organisation through its configuration of resources within a challenging environment, to meet the needs of markets and to fulfil stakeholder expectations". According to their definition, strategic decisions are concerned with the scope of an organisation's activities, the matching of an organisation's activities to its environment and to its resource capability, the allocation and reallocation of major resources in an organisation, the values, expectations and goals of those influencing strategy, the direction in which an organisation will move in the long term, and implications for change throughout the organisation (Johnson and Scholes, 2006). According to their definition strategy is a well integrative pattern of decisions leading to the purpose of the organisation in terms of long term objectives and action programmes and the priorities given to resource allocation in an attempt to achieve a long term sustained advantage by responding to a turbulent environment. David (2009) also defined strategic management as the art and science of formulating, implementing, and evaluating cross-functional decisions that enable an organisation to achieve its objectives.

Moreover, the literature on strategic management distinguishes between two levels of strategy; business level and corporate level. According to (Porter,(2004: 2) "*business level or competitive strategy is concerned with how to create competitive advantage in each of the businesses in which a company competes, while corporate strategy or company-wide strategy concerns two different questions: what business the corporation should be in and how the corporate office should manage the array*

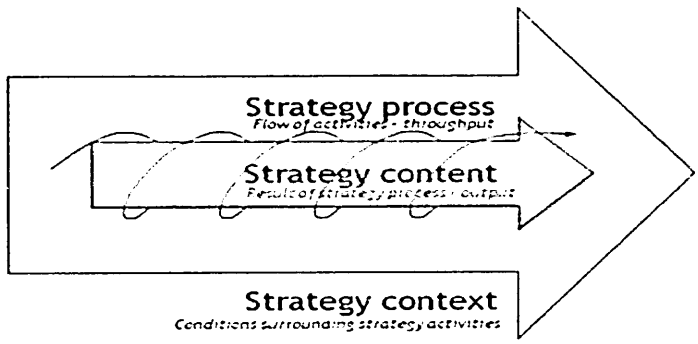
of business units". Based on this argument the business level strategy or competitive strategy is the primary concern in this research. It tries to uncover the effect of IS on competitive advantage by using the dimensions of business strategy and IS strategy that will be explained in the next section.

In summary, the concept of strategy is a complex one and authors have brought different perspectives to defining it: for example, it is seen as the determination of the basic long term goals of the company, resource and the scope and direction of the organisation in the long term. Therefore, its definition cannot be reduced to a single simple formulation. This diversity of the concept of strategy is because of the different assumptions regarding the environment and the organisation and their interrelations. The broad and well-known definition of strategy is that it is "*the act of alignment of organisation and its environment*" (Porter, 1991:97). However, business strategy (BS) and information system (IS) strategy are used in this research to find the effect of IS on competitive advantage. The next section gives an explanation of the three dimensions of strategy: strategy content, strategy process, and strategy context, and a review of the relevant literature and related research of content and process dimensions that will be used in this research. The discussions of the issues concerning the process (how) and content (what) dimensions of IS strategy are followed to determine the essential elements of the content and process dimensions of IS strategy then formulated and operationalised for this research study.

3.3 Dimensions of Strategy

Strategic challenge and opportunity can be recognised within the three dimensions of strategy: context, process and content (De Wit and Meyer, 2010a). These dimensions are not separate parts but have distinguishable dimensions.

Figure 3.1 Dimensions of Strategy



Adopted from: De Wit, B. and Meyer, R.2010 a *Strategy Synthesis: Resolving Strategy Paradoxes to Create Competitive Advantage.* 3rd ed. Thomas Rennie. Uk.

Figure 3.1 shows that the three dimensions of strategy are being linked together, the content sites with the context and is surrounded by the process. This offers a clear understanding of strategy that should be thought as independent parts of a whole. This also demonstrates that the three dimensions of strategy must work together; otherwise if one element is ignored strategy becomes sub-optimal.

The content dimension of strategy is implicated in the strategy itself by specifying the "what" aspects of possible choices and actions of the company; in other words, it focuses on the output of the strategy process. The important questions related to this

dimension are what types of strategy a company uses, what they can be based on, in which directions strategies lead, and what their outcomes are (De Wit and Meyer, 2010b). The process dimension of strategy relates to the act of alignment. It focuses on the how and why questions. The distinction between these two dimensions is useful in establishing a fuller understanding of strategic management. The interaction between these dimensions is the reason for that feature. When the strategic process dimension is organised it will have significant impact on the resulting strategy content. The content of the current strategy will strongly influence the way in which the strategy process will be conducted in the future. If the company ignores the linkages between the dimensions it will have a flat view instead of a three-dimensional view of strategy (De Wit and Meyer, 2010b).

The third dimension of strategy is the context of strategy. This refers to the set of circumstances under which both the other two dimensions (content and process) are determined. It is concerned with the "where" of strategy - in other words, where the strategy content and strategy process are embodied (De Wit and Meyer, 2010b). The important implications of the contextual analysis of strategy are the strength of the impact of contextual factors on strategy process and content, and the nature of the reciprocal relations between the environment and a strategic choice of the company (Den Bosch et al., 1997). However, there are three views regarding the context of strategy: first, the strategic process and /or strategy content is specified irrespective of specific context, second, the strategy process and content depends on the specific context of organisation, and the third, is the view between these two is to consider

some aspects of a company (De Wit and Meyer, 2010b). This research uses the content and process dimensions of IS strategy and business strategy together to examine the objectives of the research study. It adopts the definitions given below of the strategy content and process dimensions of both IS strategy and business strategy. In order to establish a homogeneous reference for the discussion of the strategy content and process for IS strategy and business strategy:

Strategy research content is defined as *"research which examines the content of decisions regarding the goals, scope and/or competitive strategy of corporations or of one or more of their business units"* (Srivastava et al., 2001:168). According to Srivastava et al. (2001) goal content may address questions regarding survival, economic performance, social conduct, and other fundamental positions or results which the company has made a commitment to achieve. Scope content may focus on diversification, vertical integration, geographic expansion, strategic alliances and methods for changing scope such as internal growth, acquisitions and divestments. Competitive strategy content research may address questions regarding strategic groups and industry segmentation, determinants of business unit performance, taxonomies of strategy types, stage of industry evolution, and signalling and competitive response.

Strategy process dimension has been defined as "*a number of fundamental questions. It focuses on how a general manager can continuously influence the quality of the firm's strategic position through the use of appropriate decision processes and administrative systems*" (Chakravarthy and Doz, 1992:5). The

administrative systems in this definition mean the organisational structure, planning, control, incentives, human resource management, and value systems of firm. These definitions are adopted because of their contribution to the previous research and the nature of the oil companies involved in this research. Furthermore, IS strategy research should describe the strategic process variables using the characteristics of the approaches a company follows in developing and implementing its strategic IS plans.

The dimensions of IS strategy and business strategy used in this research will be explained later in this chapter with the organisational performance variable to look closer to the link between IT and the organisational performance. These sections provide a clear picture of the research.

3.4 Definition of IS Strategy

Information systems (IS) strategy is an important and critical issue within the literature of information systems. Researchers have suggested a number of definitions of IS strategy. Using different terms such as IS strategy, IS planning, and strategic IS planning (SISP), almost all of these terms address the same concept. For example, Teo and Ang (2000:275) defined SISP as *"the process of identifying a portfolio of computer-based applications to assist an organization in executing its current business plans and thus realizing its existing business goals"*. It is also defined as *"the selection of rather prosaic applications, almost as if from a predefined list that would best fit the current and projected needs of the*

organization" (Galliers and Leidner, 2003:217). Earl (1989) shows that IS strategy is concerned with the primary aligning of IS development with business needs and the search for competitive advantages from IT. Also, Hemmatfar et al., (2010:158) suggest a clear definition of strategic IS as *"a system that helps companies change or otherwise alter their business strategy and/or structure"*. Finally, in one analysis the literature regards SISP as a guide to the long term process that attempts to find a balance between a set of IT application developments which might help the company achieve competitive advantage (Hemmatfar et al., 2010 and Chen et al., 2010).

3.5 Importance of IS Strategy

The importance of IS strategy can be understood by addressing the objectives of IS and their role within the organisation. According to Sepehri (2010), he states that the main objectives of IS strategy as suggested by Mclean and Soden (1977) are to develop communication between users of computer and management information systems (MIS) departments, increase management support for the computing section and improve the forecasting and allocation of information system resource requirements. Furthermore, SISP identifies different ways to improve the MIS department and clarifies new and good outcome applications in computer work (Lederer and Sethi, 1988). Earl (1993) believes that SISP is the critical issue and major concern of most organisations because SISP's purpose is to identify the computerisation targets in the organisation which can make considerable

contributions to business and other organisations. He selects four areas and makes them the main objectives for SISP: alignment between IS and business goals; exploiting IT for competitive advantage; directing efficient and effective management of IS resources; and developing both technology policies and architecture. From these objectives, Earl (1993) argues that information systems strategy is only interested in the first two areas and dominates the other two. However, there are different discussions in the literature about achieving competitive advantage through IT (Earl, 1993, Porter, 1985, Mcfarlan, 1984, and AhmadPour et al., 2011). Some of the other research believes that there is little evidence to suggest that competitive advantage can be achieved as an outcome from using IS strategy formulation process (Galliers, 1987, Hemmatfar et al., 2010). Galliers states that IS formulation objectives are: efficiency, effectiveness and competitiveness. The first objective is the prime focus of the IS function because effectiveness is related to the whole organisation; and the last objective focuses on the organisation's environment. In conclusion, IS strategy is an important issue because IS/IT has become a central concern to the organisations and to business strategy and can help support the companies in achieving competitive advantage. Hemmatfar et al. (2010) suggest that the important factor in achieving competitive advantage is the concentration on IS because IS has a vital role in business operation and financial and non-financial aspect such as decision making as a big role of management.

3.6 The Variables of the Study

This research uses concepts, content, and process of IT strategy and business strategy to find the effect of IT on competitive advantage. This approach may help to achieve clear results by reviewing IT strategy and business strategy (content and process) from different viewpoints instead of using just one of these dimensions. It starts with IT strategy concepts, content, and process then business strategy concepts, content, and process; finally the organisational performance by explaining the indicators that are used to measure this variable and how the impact of IT on the performance can be measured.

3.6.1 IT Strategy

This section reviews the literature on IT strategy concepts, IT strategy content and IT strategy process. The concepts of IT strategy reflect the strategies used in the companies, the content and process of strategy explain what and how these strategies are working.

3.6.1.1 IT Strategy Concepts

The concepts of IS/IT strategy adopted from the definition of Earl (1989) used in studies such as Hussin et al. (2002), Sabherwal and Chan (2001). Hussin et al used Earl's strategies: IS strategy, IT strategy and IM strategy to align business strategy and IT strategy in small businesses. They focused just on the content dimension of IT strategy in the research and did not use the process dimension. However, Earl (1989) distinguished between three different types of strategy formation:

information systems (IS), information management (IM) strategies, and information technology (IT). According to Earl IS strategy related to business-led and demand-oriented IT and is concerned with either supporting existing business strategy or improving new strategic IT choices. IT strategy is concerned with how IS strategy will be implemented and IM strategy is described as organisation based, relationships oriented and management focused. Based on these three levels of strategies suggested by Earl, the concept of IS strategy used in this study includes questions on various aspects of IT strategy. These questions cover three levels of IT strategy-IS strategy, IM strategy, and IT strategy. These concepts include seven statements of IT issues: IT investment decisions; the time frame for problem solving; IT matching business needs; concerns with IT management; degree of systems integration; centralising the provision of IT facilities decentralised support; and IT benefits sought.

3.6.1.2 IT Strategy Content

The research on the IS strategy content dimension is highly diverse. Each study focused on certain special characteristics of IS strategy and claims that such characteristics should be part of the antecedents of the success of the business in a company. Table 3.1 below shows the analysis of the key elements of some previous studies used in the content dimension and their main attributes.

Table 3.1Summary of Previous Research on the Content Dimensions of ISS

The Content Dimensions of IS Strategy		
Representative Studies	**Key Elements**	**Special Attributes**
Sethi (1988)	Competitive advantage from an information technology application	**Strengths:** specify the essential contents of IS strategy which can provide competitive advantage for the organisation **Weakness:** focus only on content issues but fail to recognise the significant effects of the planning process on organisational, individual, and strategic aspects of IS planning
Chan et al. (1997)	IS support for business strategy orientations: IS support for aggressiveness, IS support for analysis, IS support for internal defensiveness, IS support for external defensiveness, IS support the futurity, IS support for proactiveness, IS support for riskiness, and IS support for innovativeness	**Strengths:** identify the strategic intents of IS in relation to business strategic orientations. **Weakness:** narrowly defined supportive role of IS.
Service and Maddux (1999)	Significance of organisational information quotient	Essential content: aiming, capturing, balancing, measuring, designing, and in order to sustain competitive advantage IS should be linked to company's distinctive competence and business strategy.

Table 3.1 continued

The Content Dimensions of IS Strategy		
Representative Studies	**Key Elements**	**Special Attributes**
Broadbent et al. (1999)	IT infrastructure	Management and implementation of IT infrastructure should be done in an iterative manner, the infrastructure range that crosses business unit boundaries is critical, and infrastructure flexibility is positively related to competitive advantage but this would augment the cost
Duhan et al. (2001)	Competence based view of IS strategy	Information becomes the heart of the IS content for knowledge based firms, and business objectives can be realised through exercising competence leveraging and building
Sabherwal and Chan (2001)	1-Business strategy attributes Offensiveness, risk aversion, aggressiveness, proactiveness, analysis and futurity. 2-Business strategy types: defender, analyser, and prospector. 3-IS strategy attributes: operational support system, market information systems, strategic decision support systems, and interorganisational systems. 4-IS strategy types: IS for efficiency, IS for flexibility and IS for comprehensiveness.	**Strengths:** identified business strategy types and attributes also IS strategy types and attributes Found there impact on business performance from the alignment in some organisation. **Weakness:** focuses only on content of strategy and used just IS strategy without studying IT and IM strategy
Cragg et al.(2002)	They used moderation variables which form an interaction between business strategy and IT strategy rather than as a simple match between the two.	Conclude that positive impact of the alignment on business performance (profitability, sales growth, financial resources, public image and client loyalty).

Table 3.1 continue

The Content Dimensions of IS Strategy		
Representative Studies	**Key Elements**	**Special Attributes**
Shu (2002)	1-Business strategy content: goals of business strategy, scope of goals and strategic completive orientation. 2-Content of IT strategy: support and advantage from IS, distinctive competence and organisational information quotient. 3-Business strategy process and IT strategy process: organisational, individual and technological aspects.	Focuses on content and process dimension of business strategy and IT strategy.
Hussin et al. (2002)	1-Business strategy: price reduction, quality product, product differentiation, product diversification, new products, new markets , quality service, intensive marketing , and production efficiency 2-IT strategy supported these nine strategies.	Alignment between the contents of business and IT strategies.
Chan et al. (2006)	They focused on content and process of BS&ITS 1-They used the following factors: Shared domain knowledge, planning sophistication, organisational size, prior IS success, environmental uncertainty. 2-Business strategy: defender, prospectors and analyser.	1-Developed and empirically tested a comprehensive model provides different factors affect alignment also the impact of the alignment on business performance. 2-examined the relationship between antecedent, alignment and performance.
Schniederjans and Cao (2009)	Operations strategy dimensions: flexibility strategy, quality strategy, delivery strategy and cost strategy.	Concluded that there is relationship between the alignment and business performance.

Table 3.1 continued

The Content Dimensions of IS Strategy		
Representative Studies	**Key Elements**	**Special Attributes**
Yayla and Hu (2011)	1-They used content and process dimensions of ITS and BS 2-Environmental uncertainty dimensions and strategic orientation dimensions moderated the effect of the alignment between IT strategy and business strategy on organisational performance.	Extending the alignment literature in general since they found strong empirical support for the moderating effect of environmental uncertainty on the strength this relationship.
Faryabi et al.(2013)	1-They considered the two dimensions of BS and IT strategy. 2-IT strategy dimensions: information technology scope, systemic competencies and IT governance. 3-They used Chan et al (1997) business strategies	Business strategy orientation and business performance have positive association

Adopted from the review of the literature

Table 3.1 summarises thè previous studies on the content of IS strategy in order to operationalise the content of IS strategy for this research. The first dimension of IS content is adopted from Hussin et al. (2002) who in turn adopted this dimension from Chan et al. (1997) changing the business strategy items. They used nine business strategies in his research instead of the items that were used in Chan et al. (1997) research. These strategies are pricing reduction strategy, quality product, product differentiation, product diversification, new products, new markets, quality

service, intensive marketing, and production efficiency. In the current research these items of business strategy are used to measure IT support dimension for the nine business strategies that are used in the concept of business strategy. The other two dimensions of the content of IS strategy are derived from Shu (2002) study which operationalised his content dimension from the previous studies. Shu (2002) identifies the three dimensions of the content of IS strategy in his research on the basis of the enriched contributions from this previous research. They represent an economic set of the essential dimensions due to the close relatedness and similarity of the original dimensions. These dimensions are distinctive competence, organisational information quotient, IS infrastructure and governance. These dimensions are chosen because of the contribution from all the previous research and also represent the key issues pertinent to the defined dimensions which are relevant to the questionnaire design. The IS strategy content dimensions by Shu (2002) include three dimensions as follows:

1. Support and Advantages offered by IT: these include IT support for the nine business strategies that are used in the concept of business strategy including1) pricing reduction strategy, 2) quality product, 3) product differentiation, 4) product diversification, 5) new products, 6) new markets, 7) quality service, 8) intensive marketing and 9) production efficiency.
2. Distinctive competence: the major ingredients used by a company in designing and operating its IS and in adding value to its products and services. It includes flexibility in providing different classes of information, the ability to realise

business objectives through competence leveraging and building, and the IT contribution to the creation of new business strategies and support for the business strategy enforced.

3. Organisational information quotient: this aims for the advancement of the organisational information quotient for creating and sustaining competitive advantage for the company. It includes: aiming for system robustness through fundamentals; types and ranges of technology; level of computerisation and sources of technology; capturing market and customer focuses; and balancing the provision of more functional levels of strategy.

3.6.1.3 IT Strategy Process

As mentioned above in the section on dimensions of strategy, the strategy process definition is adopted from Chakravarthy and Doz (1992). The strategy process according to them can be defined as that it cannot be taken for granted that there is a uniform way of strategy formation. Strategy formation is related to different schools in the literature. Researchers such as Mintzberg and Lampel (1999) point to ten schools of thought for strategy formation. These schools are summarised as follows:

1. The Design School: (a process of conception): strategy formation is seen as achieving a significant fit between the internal situation of the organisation and external environment. The main contributions of this school are reducing uncertainty, useful in relatively stable environment and supporting strong and visionary leadership.

2. The Planning School: (a formal process): the main role in the formation process is undertaken by the staff planners according to this school. The process is formal and analysable into distinct steps that are supported by different techniques in the organisation such as objectives, budgets, programmes, and operating plans, and defined by checklists. The contribution from this school is clear direction, resource allocation, and help in control.
3. The Positioning School: (an analytical process): the process of strategy formation is reduced to generic positions selected through formalised analyses of industry situations. Its contributions provide content in a systematic way to the existing way of looking at strategy focus on hard facts, particularly useful in early stages of strategy development when data are being analysed.
4. The Entrepreneurial School: (a visionary process): this school turns vague visions or broad perspectives into strategies instead of price plans and uses forceful leaders to focus the process on particular contexts in the organisations. The main contribution of this school is the vision and a help for organisations in difficult times and is widely supported but it can be used flexibly and broadly.
5. The Cognitive School: (a mental process): this concentrates on strategies in people' minds and on how information is processed. It considers and analyses the way that people recognise forms and process information such as knowledge structure mapping and concept attainment. The contributions from this school are: identifying strategies in the cognitive process in the strategy mind, the emergence of strategies as concepts, building creativity of the strategy process.

6. The Learning School: (an emergent process): the strategies, plans or vision are emergent and there is a connection between strategy formulation and implementation in this school. This school offers the organisation to help to solve complex and unpredictable problems of strategy formation, knowledge for more people not just the leader, in the situation of complexity and continual change.
7. The Power School: (a process of negotiation): in this view, strategy is power; it develops between power holders within the company and/or between the company and its external stakeholders. What this school offers is help to build a stronger company or people to continue in their business in the corporate jungle, decrease the reaction with the design are made, democratic view , it is realistic and making necessary change through the problem are faced.
8. The Culture School: (a collective process): for this school strategy formation is fundamentally a collective and corporative process, rooted in culture and looking to the common interest. This school helps to emphasise social processes, beliefs and values that affect decision-making and strategy formation.
9. The Environmental School: (a reactive process): sees the environment as the actor not a factor. Strategy is affected by the challenges coming from the external environment. It focuses on the environment by giving the environment a role in strategy formation.

10. The Configuration School: (a process of transformation): strategy formation is rooted in the process of transformation. It changes the state of company from one to another. It views the organisation as a stable configuration of its characteristics.

The overview of these schools by Mintzberg and Lampel (1999) makes it clear that there are different approaches in the process of strategy formation. They provide a summary of the studies on strategy formation in general. These schools help to understand these different approaches of the strategy formation. Therefore, they are very helpful in operationalise the process dimension of strategy and identified the essential factors related to IS strategy process dimension.

Table 3.2 below summarises the previous research done on IS process dimension.

Table 3.2 Summary of Previous Research on the Process Dimensions of ISS

The Process Dimensions of IS Strategy		
Representative Studies	**Key Elements**	**Special Attributes**
Lederer and Sethi (1991)	Key elements of IS planning process: • IS Implementation. •Prioritisation of IS requirements. • Hardware planning. • Cost of planning process.	**Strengths:** Highlights the infrastructure of IS within an organisation in relation to the IS architecture and its implementation process. **Weakness:** The level of planning sophistication and other contextual factors in the planning process have not been discussed.
Auer and Reponen (1997)	Evolution model for Information Management Strategies: • Coherent IS strategy for management vision and business strategies. •IS for sustained competitiveness and continuous learning process. • Planning process aiming at effective communication of strategies and organisational coherence.	**Strengths:** Utilises the organisational approach and treats IS strategy as a result of an interactive working process to support learning in an organisation. **Weakness:** Qualitative arguments lack empirical support.
Levy et al. (1999)	Identify three frameworks of IS planning: • Awareness frameworks • Opportunity frameworks • Positioning frameworks	Highlights the choice of IS planning framework is context dependent and positioning framework offers least assistance to small and medium firms.

Table 3.2 continued

The Process Dimensions of IS Strategy		
Representative Studies	**Key Elements**	**Special Attributes**
Hackney and Little (1999)	Emphasises the opportunistic approach of IS planning: • Utilise informal social relations to develop a good understanding of the complex managerial situations arising with an increased use of IT. • Strategy process is diverse, unpredictable and changing. • Holistic models in IS strategy planning is advocated.	**Strength:** Addresses the need for linking IS strategy with organisation's business strategy. **Weakness**: The exact form of holistic model is still undefined.
Segar and Grover (1999)	Identifies the process profiles of IS strategy planning: • Formalisation • Flow • Participation • Consistency • Focus • Comprehensiveness	**Strength:** Highlights the importance of planning sophistication, Provides empirical support for the relationship between planning sophistication and IS success, Signifies the importance of organisational integration and its effects on successful IS planning. **Weakness:** Focus only on the aspects of IS process.
Salmela et al. (2000)	The comprehensive approach of IS planning: • Contrast the effects of comprehensive and incremental approach on IS planning. • Identifies the essential planning process dimensions: plan comprehensiveness, approach to analysis, planning organisation, basis for decision, and plan control.	**Strength:** Use action research to deduce that comprehensive formal process of IS planning is better than incremental planning process even in turbulent environment. **Weakness:** Generalisation for its application in other organisations is doubtful.

Table 3.2 continued

The Process Dimensions of IS Strategy		
Representative Studies	**Key Elements**	**Special Attributes**
Kearns and Lederer (2004)	Process and outcomes relates to business and IT strategy.	Positive effect of alignment on firm competitive advantage(e.g. IT is to lower costs or differentiated products)
Chan et al. (2006)	1-They focused on content and process of BS and ITS 2-They used the following factors: Shared domain knowledge, planning sophistication, organisational size, prior IS success, and environmental uncertainty. 3-Business strategy: defender, prospectors and analyser.	1-Developed and empirically tested a comprehensive model provides different factors affect alignment also the impact of the alignment on business performance. 2-examined the relationship between antecedent, alignment and performance.
Yayla and Hu, Q (2011)	1-They used content and process dimensions of ITS and BS. 2-Environmental uncertainty dimensions and strategic orientation dimensions moderated the effect of the alignment between IT strategy and business strategy on organisational performance.	Extending the alignment literature in general since the found strong empirical support for the moderating effect of environmental uncertainty on the strength this relationship.
Faryabi et al. (2013)	1-They considered the two dimensions of BS and IT strategy. 2-IT strategy dimensions: information technology scope, systemic competencies and IT governance. 3-They used Chan et al (1997) business strategies.	Business and IT strategy orientation and business performance have positive association.

Adopted from the review of the literature

Table 3.2 reviews different research on the process dimension of IS strategy. It shows some of the significant elements of this dimension and the attributes of these researches. Based on Table 3.2, there are three significant aspects of IS process dimension: organisational, individual, and technological aspects. These three dimensions are used in this research. They are adopted from Shu's (2000) research because they help him to achieve his objectives and they describe the main attributes for the IS strategy process that are needed from this research. The explanation of these aspects of the process dimension of IT strategy as follows:

1. Organisational aspect. It includes nine statements related to the attributes of the organisation and they focus on formality of the degree of the structure employed in the process of planning and implementation, scope of the comprehensive planning efforts and the breadth of planning activities, systematic documentation, and compares the strengths and weaknesses of the available strategic options in IS planning process.
2. Individual aspect. It includes two statements related to the attributes of the IS planning process in relation to the behaviours of individuals in the organisation. It is concerned with IS managerial skills and focus on the extent to which the IS plans are smoothly implemented with the available IS managerial skills and individual participation and influence concerned with the extent to which the individual are involved in the strategic decision-making process.

3. Technological aspect: it included two statements concerned with the decision-making process in relation to the integrative role of IS architecture in strategy process and aims for product/service differentiation due to IS capabilities.

3.6.2 Business Strategy (BS)

Business Strategy (BS) can be defined as "*the plans, choices and decisions used to guide a company to greater profitability and success*" (Kourdi, 2009:3). Business strategy (BS) then encompasses plans for the long term that are used to achieve particular goals and objectives of the company. It describes how a company can achieve success in its market and face its competitors.

3.6.2.1 Business Strategy Concepts

The concepts of business strategy were reviewed in different research such as Barkham et al. (1996), Pratten (1991), Reid et al. (1993), Small Business Research Centre (SBRC) (1992), Hall (1995), Hussin et al. (2002), Chan et al. (2006), and Yayla and Hu (2011). The development of the measurement of business strategy has been influenced by the majority of these studies, which used different business strategies as shown in Table 3.2 above. The nine business strategies operationalised and developed from these previous studies and used in this study are: price reduction, product quality, product differentiation, product diversification, new markets, quality service, intensive marketing, and production efficiency. This study

has adopted these strategies as business strategy concepts. These strategies were considered appropriate for this study because they have been used in previous studies. Moreover, they can easily be applied to the Libyan oil companies studied in this investigation.

3.6.2.2 Business Strategy Content

The literature of strategic management covers research into the content of business strategy. Among these studies Shu (2002) determined the dimensions of the content of business strategy as business strategy goals, scope of these goals, and competitive strategies. He adopted these dimensions from Fahey and Christensen's (1986) research on the content of business strategy. They achieved the research objectives by using these dimensions of the content of business strategy. The dimensions that capture the essential features of the content domain of business strategy that are used in this research are explained as follows:

1. Business strategy goals. These are focused on the survival, economic performance, social conduct, and other fundamental positions or results which the organisation has made commitments to achieve.
2. Scope of business strategy goals. This deal with the strategy an organisation would adopt to extend or change its business scope such as diversification, vertical integration, geographic expansion, strategic

alliances, and the methods of changing its business scope by internal growth acquisitions, or divestments.

3. Competitive orientation. This addresses different aspects that a company may use in its competitive orientation such as aggressiveness, defensiveness and innovation.

These contents of business strategy are used in this study because they have been used in the previous research and they are appropriate to apply in the context of Libyan oil companies.

3.6.2.3 Business Strategy Process

To operationalise a set of dimensions of business strategy process, the researcher adopted the key dimensions similar to the IS strategy process dimensions: organisational, individual, and technological aspects of business strategy process. They are explained as follows:

1. Organisational aspects. They are focused on the process of formulating decisions within the company structure context, roles in the company and reporting relationship.
2. Individual aspects of business strategy. They are concerned with the business strategy planning process in relation to individual behaviours within the company.
3. Technological aspects of the business strategy process. This concerns the process of decision making in relation to the extent to which business

strategy can be good when supported by the appropriate technological configuration of information systems in different phases of its formulation and implementation.

All the above aspects have been studied by previous research and they are adopted from Shu (2000) who supported these dimensions by contrasting and comparing the elements of the process dimensions of business strategy in different previous studies such as Littler et al. (2000), Hendry's (2000), Chan et al. (2006) and Faryabi et al. (2013). However, the present research study is attempting to find the effect of IT on competitive advantage.

3.6.3 Business Performance of the Company

The performance of the company is the dependent variable in this research. It is a significant variable in exploring the relationship among related organisational issues related to business performance. It is used to measure the effects of IT on competitive advantage. The impact of IT on the performance of the company will reflect the competitive advantage position of the company. This section explains the indicators which are used to measure the performance of the company then explains how the impact of IT on organisational performance can be measured. It attempts to look closely at the link between IT and organisational performance.

3.6.3.1 Indictors of Business Performance of the Company

This section describes the indicators used to measure overall organisational performance. As mentioned above, this variable is used in this research as a dependent variable and is developed to measure the perceived success of the organisation as viewed by managers. However, it is difficult to define the way to measure the company performance and what the company performance is. This is because of the uncertainty around this variable - both what it means and how it can be measured. Researchers have suggested a variety of approaches to measuring performance such as financial or objective measures and non-financial or subjective measures. This study used a combination of measures of performance of company non-finance and finance methods to measure organisational performance, because, as (Chong, 2008:2) stated, "*combinations of finance and non-finance measures help the owners-managers to gain a wider perspective on measuring and comparing their performance*". In research terms, the advantage of using combined measures to measure the performance of the company is that the study benefits from the features of these two methods but also using a combination of financial and non-financial captures a wider view of business performance, in particular the issue of competitive advantage. These measures are long-term profitability, sales growth rate, financial liquidity (cash flow), operating profits before financing and taxation, and overall business performance. The next section explains how the impact of IT on the performance of the company is measured. These measures were listed in the questionnaire and participants were asked to rate their company on them.

3.6.3.2 The Impact of IT on Company Performance

In the previous section, the measures of organisational performance were developed to measure the overall organisational performance. This section explains the way of measuring the impact of IT on the organisational performance to find the link between IT and this variable. Organisational impact is a perceptual measure of the impact of IT on performance used in this research. It uses three levels of management: 1) the operational level covers the area of reduction of administration cost and time savings; 2) management control covers the area of decision making and internal integration; and 3) the strategic level covers image and competitive advantage. These measures are listed in the questionnaire and the participants were asked to indicate their level of agreement related to IT impact statement beside each level on the questionnaire.

3.7 IS Strategy Methodologies/Approaches

This section provides a brief discussion of some of the approaches that were addressed in IS strategy. These approaches are important issues on the IS planning process because choosing the right approach enables the IS department not only to plan its SISP activities but is also used as a guideline to solve a problem (Al-Aboud, 2011).

3.7.1 Business Systems Planning (BSP)

The Business Systems Planning (BSP) methodology was developed by IBM (1984). It combines top-down planning with bottom-up implementation. A company uses this particular methodology in order to identify its goals and functions. Therefore, it needs to determine the way that it can be used in its business process. Analysis of these business processes provides assistance in helping them in the need for data and classing data which are classified after. The combination of similar data classes develops the databases for business planning. The final BSP plan thus obtained gives an overall description of the information system architecture as well as a clear explanation of the installation schedule of individual systems (Ramaraj, 2005). The final BSP plan thus obtained gives an overall description of the information system architecture as well as a clear explanation of the installation schedule of individual systems.

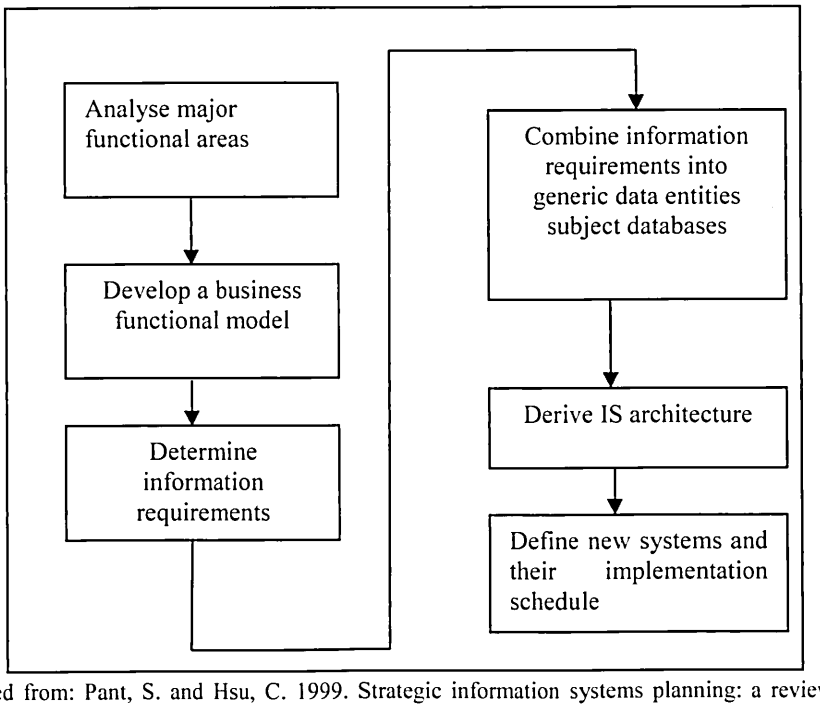
The advantages of the BSP method are that it helps to explain integrated methods in its top and down. Its application systems and requirements are derived from the business process of the firm. BSP derived architecture through functional area analysis. However, the disadvantages of BSP are that it requires from the organisation that uses this method a commitment from the top management as well as their substantial involvement and also needs a professional team from IT team to work in BSP planning. There is also a gap between top down planning and bottom up implementation and substantial time and effort is required to achieve successful implementation. It also focuses only on the internal information requirements

without covering external data processing needs (Pant and Ravichandran, 2001, Barlow, 1990).

3.7.2 Strategic System Planning (SSP)

Strategic System Planning (SSP) methodology was developed by Robert Holland, (1986) and is similar to BSP having the same steps as BSP. Lederer and Sethi, (1988) determined that there are some differences between these two methodologies: "*SSP's automated handling means the data is collected during the SISP process. The software produces reports in a wide range of formats and with various levels of detail*" (Lederer and Sethi, 1988:448). The steps for this methodology are shown in Figure 3.2 below.

Figure 3.2 SSP Methodology



Adopted from: Pant, S. and Hsu, C. 1999. Strategic information systems planning: a review. In: information resources management association international conference. P 10.

Figure 3.2 shows that there are six steps used on SSP methodology, the first step being the analysis of major functional areas, second going through the development of the business functional model, third step determining the requirements of information, fourth step combining the requirements for this information with data objects and the objectives of data bases, fifth step driving IS architecture, finally defining a different system with the timetable of the systems implementation. The advantages and disadvantages for SSP are the same as for BSP methodology. However, Ramaraj (2005) states that SSP approach derived information architecture from the business strategies and functional areas of business. SSP method is not derived from the information requirements in cross functional areas. It does not give importance to the systems integration issues.

3.7.3 Information Engineering (IE)

This method was developed by Martin (1982) and provides techniques for building enterprise models, data models and process models. IE is a more technically oriented method than other SISP methodologies. It gives the company different software for classifying SISP. The advantage of IE is the fact that it is an automated technique that helps to connect the forward systems development efforts with the company's production (Ramaraj, 2005). This advantage is due to the fact that it is an automated technique that helps to connect the forward systems development efforts with the company's production. Its application systems and requirements are derived by

analysing data models of an organisation. However, IE has difficulty in managing top management security and leader meeting criteria. Also the planning exercise is lengthy since it involves a large number of users (Pant and Hsu, 1999).

3.7.4 Critical Success Factors (CSFs)

The CSFs approach was developed by Rockart (1979) to cover and understand the information needs of the Chief Executive Officer. CSFs are those few areas where things must go right for businesses to flourish. This approach also guides the SISP endeavour by helping to identify future management control systems (Robertson, 2008). CSF analyses help to identify exactly what is most important in the work. People can thus use this kind of analysis to direct their efforts and it will help them pull together to achieve their aims. The main feature of CSFs is that they can assist the organisation to achieve its objectives. Although CSFs are specific, they differ from industry to industry, between organisations within the same industry and from one time period to another even in the same organisation (Pant and Hsu, 1999). The advantages are that CSFs analysis helps organization and business managers to concentrate their information requirement and allows them to focus the resources on developing IS with the organisation's condition. In addition, in the business CSF analysis can be achieved and used by managing some of resources. However, achieving SISP is not the result of having CSF analysis by itself; it cannot provide the technique of support data analysis or determined architecture of the data. It helps to perform the value from using CSF analysis need to be easily and directly linked to

the goals of the company. It depends on who is working with this analysis since it will not work in the right direction and does not produce value if it is used below the third level (Direct Management Level) in an organisation (Ward and Peppard, 2010).

3.7.5 The Method 1 Approach

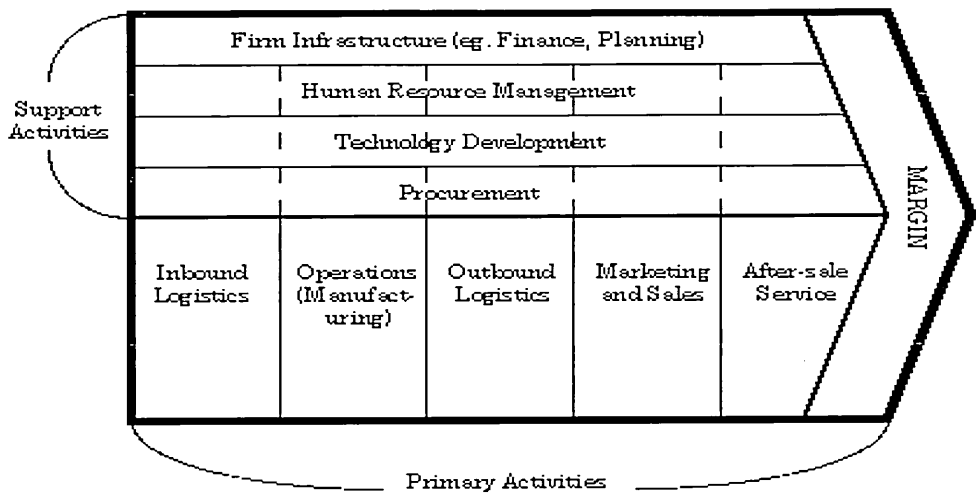
Method 1 is similar to the BSP approach; it identifies the overall IT strategy for satisfying the strategy of the organisation. It also defines data IS application and activities need to implement strategy. It is a layered approach which is called Foundation that is the CASE tools including computer programs that support Method 1. These layers are: 1) the methodology itself on the top laye, 2) the techniques in the middle layer and 3) the tools that support the techniques at the lowest layer (Lederer and Gardiner, 1992). Ramaraj. (2005) determined several support techniques such as DFD, matrix analysis, functional decomposition, focus groups and Delphi studies. The advantage of this approach is that it has three layers: methodology, techniques supporting methodology and tools supporting techniques. The disadvantage is that it failed with the aspects of integration of cross functional information systems (Lederer and Gardiner, 1992, Ramaraj, 2005).

3.7.6 Value Chain Analysis

Value could be defined as "*the customer's observation about the whole packet of benefits, either tangible or intangible, which satisfies his or her needs timely, effectively and efficiently*" (Makkar et al., 2008:183). According to Porter (2004: 36)

"*every firm is a collection of activities that are performed to design, produce, market, deliver, and support its product; all these activities can be represented using a value chain*" as shown in Figure 3.3.

Figure 3.3 Value Chain Model



Adopted from: Porter. 2004.Competitive advantage: creating and sustaining performance. Free Press. p.37.

As shown in Figure 3.3, the activities performed and used by a particular company can be analysed into primary and secondary/support activities. The primary activities are defined as inbound logistics, operations, outbound logistics, marketing and sales, and services with secondary or support activities related to the infrastructure of the firm, human resource management, technology development, and procurement. In summary, the value chain model describes the activities within and around an organisation, and links them to an analysis of its competitive strength. Therefore, it evaluates which value each particular activity adds to the organisation's products or services.

This approach views an organisation as a series of input, transformation and output stages. The organisation's competitive position can be enhanced possibly at each stage in this model by identifying the critical role that IT can play within the value chain, and the company can achieve their competitive position by the way they are using IS (Ward and Peppard, 2010). This approach will be used in the next chapter on competitive advantage models and is only reviewed here because it is related to the IS approaches.

In conclusion, in order to achieve their business strategy, companies require more and more information systems which clarify ways leading to a successful integration of their information systems by utilising appropriate hardware, software, and databases. Strategic information planning helps to achieve two objectives - firstly identifying tools organisations can use and secondly can be used as a guide to solving a problem. Each of the different approaches as discussed above has its strengths and weaknesses (advantage and disadvantage) that are summarised in Table 3.3 below.

Table 3.3 Strengths and Weaknesses of IS Approaches

IS Planning Model	Strengths	Weaknesses
Business Systems Planning(BSP)	IS requirements and business needs are derived from business process. Information architecture derived through functional area analysis.	BSP, SSP, IE and Method 1 approaches suffered from the following: 1-Focused on internal data processing business need. 2-Ignoring system integration issues. 3-Outdated. 4-Focused on building proprietary IS.
Strategic Systems Planning (SSP)	IS requirements and business needs are derived from business strategy and functional areas.	
IS Information Engineering (IE)	IS requirements are derived by analysing data models of an organisation.	
The Method 1	Layer approach: methodology, techniques support the methodology and tools supporting the techniques.	
Critical Success Factors (CSFs)	Used for prioritising key information needs of organisation and its managers.	Does not define IS architecture. Out-dated. Fails to cover the external systems.
Value Chan Analysis	Concentrate on value-adding important business activities, helps in devising information systems that support business process.	Ignoring support the changes on business strategy. No response to environmental functions.

Developed from the literature review

According to Table 3.3 the organisations can choose one or more approaches in their planning depending on their business needs and the features needed to be achieved from an IS strategy approach. However, there is an important question to be raised regarding these different approaches, and relates to the kinds of principles and

factors which lie behind these approaches. In the next section, some will be highlighted. However, researchers have tried to go beyond the mere tools, techniques and mechanics of IS strategy. They started by finding some of the aspects of IS strategy such as organisational and individual aspects of IS planning then they then proceeded to find other approaches for IS strategy. For example, Earl (1993) suggested five approaches: business-led, method-driven, administrative, technical and organisational. He concluded that the organisational approach appeared to be substantially superior. Scholars studied the non-technical and organisational aspect of IS strategy such as Galliers (1991) who proposed an approach called the social technical approach for SISP, and Reponen (1993) who characterised the information systems management strategy as an evolutionary process. The factors that underlie these approaches will be discussed in the next section which will highlight the main criticisms according to the literature.

3.8 Evaluation of IS Strategy Approaches/Methodologies

The literature is replete with discussions on the usefulness or otherwise of IS strategy approaches/methodologies. This section discusses some authors' arguments of the IS strategy starting with Galliers (1991), who discussed IS strategy approaches and pointed to different aspects of their evaluation.

Galliers argued that the literature on IS strategy concentrates too much on technical and technological issues and not enough on business management issues for example, the inability to implement strategies because the organisational capability

is lacking; the gap between business planning process and the SISP process in the organisation. Organisations may have different informal approaches for business strategy while they use standard and mechanical SISP approaches. Consequently, this form of linkage between SISP and business planning represents a weakness from the viewpoint of researchers (Galliers, 1991). He also studied IS strategy approaches in UK organisations from the point of view of efficiency, effectiveness, and competition. He found that these organisations use IS planning for internal reasons of efficiency or effectiveness while competitive advantage is gained by chance if the IS planning is good (Robert et al., 2003). In addition, Galliers (1991) agrees that IS approaches concentrate attention on producing an applications portfolio, or a database architecture, but these approaches sometimes do not help the organisation in their work ,such as identifying the necessary organisational changes, IS related skill requirements or opportunities to gain a competitive advantage. Galliers (1991) introduced his socio technical model/framework for choosing an appropriate approach based on stakeholder motivations. In this model/framework, SISP orientation puts different emphases on technology, organisation and environment, in accordance with different motivations such as efficiency, effectiveness, competitive advantage and so on. For example, the approach must put more emphasis on technology and organisation and less on environment when the SISP orientation is looking for efficiency and cost reduction goals, while, when the objective of SISP is effectiveness, the approach must place greater emphasis on organisation and less on environment and technology. To achieve competitive

advantage, the approach must place emphasis on the environment. This model/framework not only contains IT strategy but it also includes the organisational and change management issues and human resource strategy that are linked with IS strategy in this model/framework.

Galliers' approach has one advantage. It can be seen as an appreciation of the current status of IS within organisations. He also mentions the process of moving from an existing situation to the desired vision by extending the "stages of growth" model developed by Nolan (1979) and considers the issues associated with IS strategy formulation such as culture, shared values and style, staff, skills and organisational structure. Going with Galliers (1991) in his criticism of the approaches, there is a gap between the current state and one required from these approaches. Yetton et al. (1994) also discussed the alignment between IT strategy and business strategy, arguing that the implicit assumption is that the path to fit IT strategy and business strategy is driven by the business strategy of the company (Yetton et al., 1994).

Moreover, Earl (1993) evaluates IS strategy approaches/ methodologies, focussing on the extent to which they were successful or not. He found that the success of these approaches depends on three factors: the methodology chosen, its implementation and the process. The methods concerns are related to the technique, procedure or methodology employed. Problems arise with the methodology due to a lack of strategic thinking, excessive internal focus, excessive time and resource requirements and ineffective resource allocation mechanisms. As for

implementation, issues centre on the lack of adequate resources, technological constraints, organisational resistance and technical quality. Process may fail due to lack of line management participation, poor IS user relationships, inadequate user awareness and education, and low management ownership of philosophy and practice of IS strategy (Earl, 1993). Other authors such as Mcfarlan (1984) have attempted to evaluate IS strategy approaches from the point of view of the problems or failures that organisations experience when adopting these approaches. He showed that these frameworks are used as structure for analysing complex systems, shorthand for complex relationships, for clarifying dimensions of importance, and making clear the relation between business strategy and information technology. Lederer and Sethi (1988) identified some of these problems and categorised them into three categories: resource, process and output. The resource problems related to time requirement, money, personnel and top management support for the initiation study; the process problems indicated the limitations of the analysis undertaken by the methodology; and the output problems deal with the comprehensiveness of the final plan produced by the methodology. Table 3.4 shows these problems as classified by Lederer and Sethi (1988). This study had mad contribution on the analysis of SISP problems. They attempt to reduce the number of problems by suggesting more aggregate categories of these problems also they examined the problems empirically by using exploratory analysis with a wide survey of planners. Therefore, the shortcomings from this research to this study is that by identifying these problems and categorising them gave start point to understanding them and

make them clear before starting the survey of this study, specially the problems related to the planning process.

Table 3.4 IS Strategy Problems

Problem Code	Problem Statement	Source
	Resources for Implementing the Methodology	
R1	The size of the planning team is very large.	Vacca, 1983
R2	It is difficult to find a team leader who meets the criteria specified by the methodology.	Vacca, 1983
R3	It is difficult to find team members who meet the criteria specified by the methodology.	Vacca, 1983
R4	The success of the methodology is greatly dependent on the team leader.	Zachman, 1982
R5	Many support personnel are required for data gathering and analysis during the study.	Rockart, 1979
R6	The planning exercise takes a very long. time	Bowman et .al, 1983
R7	The planning exercise is very expensive	Moskowitz, 1986
R8	The documentation does not adequately describe the steps that should be followed for implementing the methodology,	Zachman, 1982
R9	The methodology lacks sufficient computer support	Zachman, 1982
R10	Adequate external consultant support is not available for implementing the methodology	Zachman, 1982
R11	The methodology is not based on any theoretical framework.	Zachman, 1982
R12	The planning horizon considered by the methodology is inappropriate	Mclean and Solden, 1977
R13	It is difficult to convince top management to approve the methodology.	Vacca, 1983
R14	The methodology makes an inappropriate assumption about organisational structure.	Yadav, 1983
R15	The methodology makes an inappropriate assumption about organisation size.	Yadav, 1983
	Planning Process Specified by Methodology	
P1	The methodology fails to take into account organisational goals and strategies.	King,1978
P2	The methodology fails to assess the current information system applications portfolio.	Schwartz,1970
P3	The methodology fails to analyse the current strengths and weaknesses of the IS department.	King,1984
P4	The methodology fails to take into account legal and environmental issues.	King,1984
P5	The methodology fails to assess the external technological environment.	King,1984
P6	The methodology fails to assess the organisation's competitive environment.	King,1984
P7	The methodology fails to take into account issues related to plan implementation.	Zachman, 1982
P8	The methodology fails to take into account changes in the organisation during SISP.	
P9	The methodology does not sufficiently involve users.	Kay et al, 1980

Table 3.4 continued

P10	Managers find it difficult to answer questions specified by the methodology.	Boynton and Zmud,1984
P11	The methodology requires too much top management involvement.	Boynton and Zmud,1984
	Output of the Planning Methodology	
P12	The methodology requires too much user involvement.	Boynton and Zmud,1984
P13	The planning procedure is rigid.	Zachman, 1982
P14	The methodology does not sufficiently involve top management.	Kay et al, 1980
O1	SISP fails to provide a statement of organisational objectives for the IS department.	Mclean and Solden, 1977
O2	SISP fails to designate specific new steering committees.	
O3	SISP fails to identify specific new projects.	Mclean and Solden, 1977
O4	SISP fails to determine a uniform basis for prioritising projects.	King,1984
O5	SISP fails to determine overall data architecture for the organisation.	Zachman, 1982
O6	SISP fails to provide priorities for developing specific databases.	Zachman, 1982
O7	SISP fails to sufficiently address the need for data administration on the organisation.	Sullivan,1985
O8	SISP fails to include an overall organisational hardware plan.	Mclean and Solden, 1977
O9	SISP fails to include an overall organisational data communications plan.	Sullivan,1985
O10	SISP fails to outline changes in the reporting relationships in the IS department.	
O11	SISP fails to include an overall personnel and training plan for the IS department.	Mclean and Solden, 1977
O12	SISP fails to include an overall financial plan for the IS department.	Mclean and Solden, 1977
O13	SISP fails to sufficiently address the role of a permanent IS planning group.	King,1984
O14	The output plans are not flexible enough to take into account unanticipated changes in the organisation and its environment.	Mclean and Solden, 1977
O15	The output is not in accordance with the expectations of top management.	Gill,1981
O16	Implementing the projects and the data architecture identified in the SISP output requires substantial further analysis.	Zachman, 1982
O17	It is difficult to secure top management commitment for implementing the plan.	Gill,1981
O18	The experiences of implementing the methodology are not sufficiently transferable across divisions.	Zachman, 1982
O19	The final output document is not very useful.	King,1984
O20	The SISP output does not capture all the information that was developed during the study.	Gill,1981

Adopted from: Lederer. and Sethi. 1988. The implementation of strategic information systems planning methodologies. MIS Quarterly. 12(3). PP.450-451.

Lederer and Sethi (1988, 1991) in their study of the SISP process in 80 companies who completed the SISP process identified certain organisational and managerial factors that related to these problems. Some of these problems were highlighted by King and David (1978), Martin (1982), Rockart and Crescenzi (1984) and Mclean and Soden (1977) as the evolution of business planning, the IS department's contribution to business planning, the scope of the SISP research, planning horizontal and organisational ownership. However, there are two questions that reflect the main contribution of Lederer and Sethi (1988) and Lederer and Sethi (1991) on the analysis of SISP problems. First, they identified different aggregate categories of the problems to cut some of these problems (Lederer and Sethi, 1991). Second, they examined the problems empirically with exploratory analysis with a wide survey of planners. However, one may point to some weaknesses of the studies. First, researchers expected that the facts and problems identified in the literature do not have a clear reference to determine their conceptual and theoretical underpinning. Second, they generalised the problems. Additionally, the researchers failed to evaluate the contextual factors that caused the problems. Boynton and Zmud (1987) argue that planning is an important subject in information management that must be one of the important aspects in a complete IT program used in the organisation. They also added two points. First, IT planning is the organisational design process. Henderson and Sifonis (1988) stat that the absence of consistency in respect of critical beliefs on assumptions regarding the internal and external context of the organisation is reflected in the difficulty of IS planning. Das et al. (1991)

point out that the IS strategy approaches do not delineate pertinent issues of MIS planning; also the conceptualisations universally do not incorporate the content and the aspects of the process of strategic MIS planning. He added that the research in the past does not answer important questions such as the meaning of the alignment between MIS and strategy competition for executives, the way this can be achieved and what the conditions that achieve compatibility enhancing performance.

Today, most organizations insist that technology and IS-related decisions be made with a clear understanding of business and organization strategy and direction. . Therefore, research discussed the approaches of IS strategy such as Sepehri (2010) who states that selecting the proper approach of IS strategy is an important issues to achieve the goals then he added other success factors such as management support, sustainability of the environment and the organisation's focus on the implementation. He concluded that the organisation should understand that IS strategy approaches are used to be in better position. The relationship between is strategy approach and the result of IS strategy success may provide some practical insights into how strategic planning practices might be modified to improve their effectiveness. In term of the effective IS strategy approach. Sepehri (2010) suggested that the effective of IS strategy approach depended on of service versus manufacture nature of the organisation and it is different based on the level of information technology in the organisation. Pollack (2010) suggested four elements for consideration emerge when developing or implementing of IS strategy approaches which included an opinion of what needs to be solved, defined

techniques on what has to be done and when to do it, advice on how to manage the quality of deliverables, and a tool kit to facilitate the process. Basahel and Irani (2009) argued that IS approaches can be used with requiring of understanding of the difference between these approaches and business needs. It is clear that these approaches are used depending on the basis of their dimensions, advantages, and disadvantages. Moreover, a classification of techniques depends on their focus, benefits, advantages, and disadvantages.

Therefore, the shortcomings that relate to the received understanding of the conceptual models of IS strategy may be summarised as follows: first, the main problem is that most of the studies in IS strategy lack empirical support. This limitation has sometimes been explicitly acknowledged by the authors themselves. For example, Earl (1993) argues that further investigation should be made into the organisational approach to understand it in more detail and to assess its effectiveness more rigorously and to discover how to make it work. Second, the second problem faced in this kind of research is related to the theory itself. The authors usually do not explicitly spell out their theoretical guidelines when they discuss IT/IS strategy. Their references to the theoretical background are often under developed. Also they refer to a number of perspectives of organisational theories but they do not investigate in adequate detail some of the assumptions associated with them.

Furthermore, there is some argument among the authors within IS strategy. The perspectives of the researchers are different and disjointed and there is no shared

paradigm amongst most of these studies. Also in evaluating these perspectives it appears that some of the concepts that are discussed in the literature seem to be inconclusive. The answers that are found in the literature do not give a clear presentation. For instance the research undertaken by Das et al. (1991) presents a framework linking MIS planning content and process to the competitive strategy. They did not go further to investigate the concepts of competitive strategy which they adopted from other research. The assumption of their research is that competitive strategy is exogenous to their framework/model. This implies that it is still not clear how competitive advantage can be achieved reflecting some of the problems concerning the research in this field. Researchers fail to clarify where competitive advantage will stem from. It could come from using careful planning or by chance or none of them, rather than by organisational learning. It is also not clear whether the root of competitiveness is internal or external to the organisation. Despite the wild fluctuations in the business world, the use of information systems is still accepted by business organisations as a way to achieve competitive advantage (Mata et al., 1995) but researchers argue that the fact is that it is challenging to create sustained competitive advantage by using information systems and that more research into this is needed, both empirical and theoretical. In conclusion, it is clear that the new trends of IS strategy research aim to develop a theoretical focus on the organisation itself instead of on the technology of SISP. The developing perspective takes into account the basic characteristics of the organisation and the company, and

the specific nature of the resources and processes which are unique within each organisation.

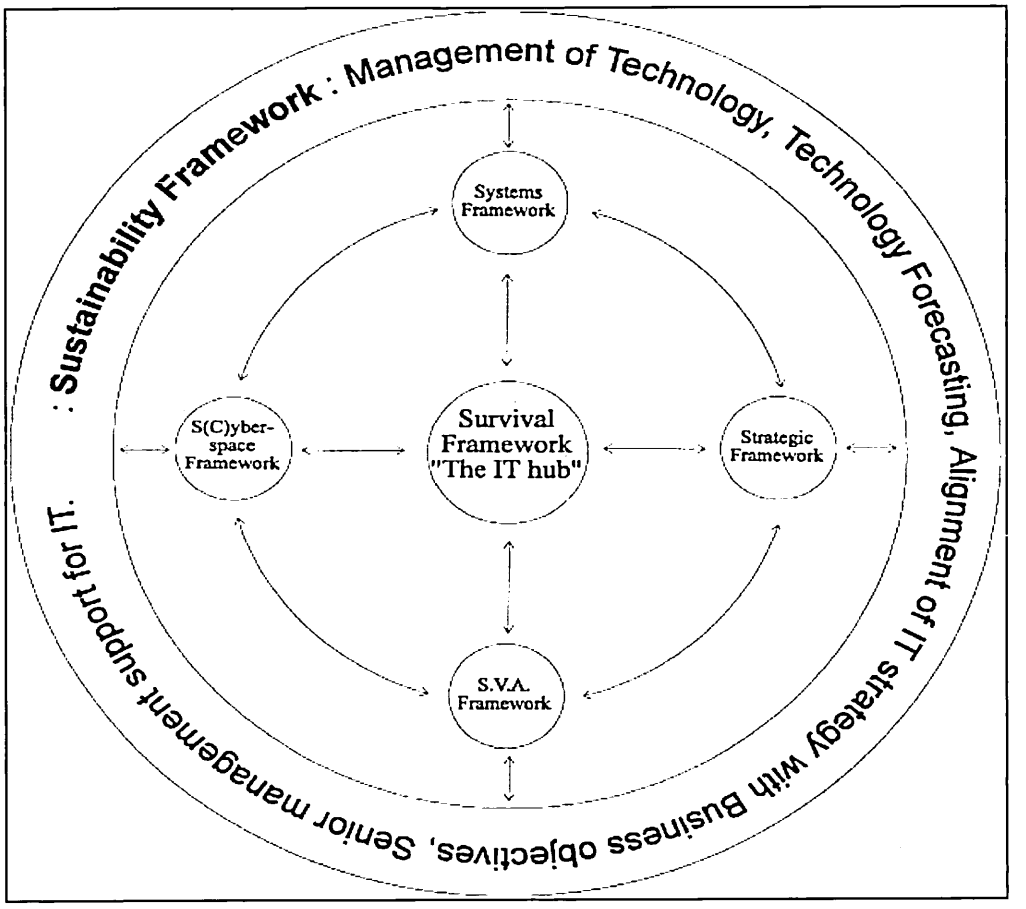
3.9 Research on IS Strategy

This section reviews some of the previous research done on IS strategy and relates it to the current research study.

Earl (1993) examined the experience of SISP in 27 organisations by interviewing not just IS managers, but also general managers and line managers. These organisations used the five different SISP approaches mentioned above which have different characteristics, as explained by Earl (1993) who found that different approaches appeared to be most effective and the taxonomy of the five approaches potentially provides a diagnostic tool for analysing and evaluating an organisation's experiences with SISP later. Teo and Ang's (2000) study looked at the usefulness of strategic plans for information systems. Their studied sample was developed from the Key Business Directory of Singapore which lists 136 IS executives. Their findings were that the plans of IS had been in general perceived to be useful for sustaining business goals, developing systems integration, using information technology for competitive advantage, and prioritising IS development projects. Moreover, Philip and Booth (2001) developed a model that can be used to examine the link between the function of information systems (IS) and competencies in IS management. They critically assessed most of the existing models, highlighting in each case the positive and

negative aspects and then proceeded to outline the rationale for the development of a new six 'S' framework shown in Figure 3.4 below.

Figure 3.4 Six 'S' Framework



Adopted from: Philip. and Booth. 2001. A new six 'S' framework on the relationship between the role of information systems (IS) and competencies in IS management. *Journal of Business Research*. 51(3). PP.233-247.

Specifically, the aim of their study is to illustrate how the majority of valuable sections of the literature can be reconceptualised into a format that can display the highly dynamic and fluid nature of the role played by information systems within

organisations. Their model as shown in Figure 3.4 implies that IS plays five different roles in any organisation. That placed around entitled centre, it emphasises the fact that the technology position in the company as a main position of achieving goals and organisation cannot be achieved without it. Gammelgard (2007) studied the business value assessment of IT investment. The research focused on developing a method for assessing business value contribution differentiation by arranging different IT alternatives. He found that the IT investment evaluation method offered the assessments of differentiations in business value contribution that can be achieved from the different IT used. Also, Davern and Wilkin (2010) studied an integrated view of IT value measurement, providing a model for understanding the theoretical characteristics of independently observable and perceptual measures, and offered more perspective on these approaches to IT value measurement.

3.10 Conclusion

The significance of IS strategy is increasing and has become the major theme in the literature on information technology. This chapter provided an overview of the mainstream literature on IS strategy, and reviews the approaches of IS strategy to make them clear and comprehensible for this research. The evaluation of these approaches is highlighted; the problems and shortcomings related to these approaches are discussed. The research on IS strategy is also reviewed to make the link between them and this research. The next chapter will discuss the literature on competitive advantage. It will explain the importance of competitive advantage with

a brief review of competitive advantage models used in previous research by outlining some advantages and disadvantages from these models.

CHAPTER FOUR

COMPETITIVE ADVANTAGE

4.1 Introduction

Competitive advantage is at the heart of a company's performance in a competitive market Porter (2004). A company can gain competitive advantage by providing added value to the customers. This chapter outlines the second factor in this research, competitive advantage. It starts by providing the meaning and types of competitive advantage in section 4.2; section 4.3 discusses how a company can gain competitive advantage; section 4.4 reviews competitive advantage models; in section 4.5 the evaluation of these models is explained, and finally section 4.6 concludes the chapter.

4.2 The Meaning of Competitive Advantage

Competitive advantage is *"an advantage over competitors gained by offering consumers greater value, either by means of lower prices or by providing greater benefits and service that justifies higher prices"* (Marcus, 2010:10). Kotler and Keller (2012:15) state that "*competitive advantages give a company an edge over its rivals and an ability to generate greater value for the company and its shareholders*". According to Porter (2004) there are two main types of competitive advantage: cost advantage and differentiation. Cost advantage refers to the ability of a company to produce products or services with less cost than the competitor in the same market enabling the company to sell these products or services at lower prices

than its competitors, while differentiation advantage refers to the ability of a company to create products or services which differ from its competitors.

4.3 Gaining Competitive Advantage

Competitive advantage can be gained by providing value to the customers. Callon (1996) noted that using sustainable and achievable strategies helps to gain competitive advantage. However, achieving competitive advantage through IS has always been the main objective and concern of IS strategy. Many authors have suggested that it is not possible to meet this objective for reasons related to the kind of assumptions made in regard to IS as well as the perspectives in the organisation. IT has the ability to enhance competitiveness in the company by increasing capability, decreasing costs, and improving services Fujun et al. (2006). According to Ahmadpour et al. (2011) in a fast-changing competitive world, knowledge management plays a key role, and as a result in order for companies to achieve competitive advantage they should focus on their IS.

4.4 Capability and Competitive Advantage

Capability means "*the interconnection of people, knowledge, IT, tools, and processes that enable a company to out execute competitors on certain important measure. It might be the ability to secure shelf space in particular types of stores, or to use customer-data mining to develop new products, or to bundle products and services to meet customers' shifting needs over time*" (Leinw and Mainardi, 2011:2). Hamel and Prahalad (1999) cited in Malik (2007: 49) and defined a capability as a

"*bundle of skills and technologies that enables a company to provide a particular benefit to customers*". These definitions of capabilities imply that capabilities mean more than functions and activities. Furthermore, Ulrich and Lake (1991:82) believe that *"capability is based on a set of principles not practices that develop over time"*. They explain management practices by what managers do and where they spend their time and management principles as the key questions and concepts that underlie and influence management practice. These managers can sustain competitive advantage in their company when they understand the principles of the capability and are continually able to adapt their practices to those principles. Therefore, companies have sustainable competitive advantage when they produce and/or provide services with attributes which correspond to the key buying criteria for the majority of their customers in their market. These attributes include different factors such as price, specification, reliabilities, aesthetics, functionality, availability, image, etc (Hall,1993). Hall, (1993) states that any company which is making sales must, logically, enjoys an advantage in the eyes of those customers which used their products/services. The sustainable competitive advantage can be achieved not only by producing products and/or services with significant attributes to the customers. The company also needs to have a capability differential. These capabilities are: 1) capabilities based on assets such as regulatory capabilities and positional capabilities, and 2) capabilities based on competencies such as functional capabilities and cultural capabilities (Hall, 1993). The regulatory and positional capabilities related to the asset which is the business while the second capabilities

(functional capabilities and cultural capabilities) based on competencies or skills such as advertising or zero defect production therefore, these capabilities have different concerns; the first capabilities concerns "doing" and the second concerns "having". The company also needs to create its capability system according to its business. The business of the company is derived not just from the conventional approach of sizing a potential market for their products and services but by looking in depth at their current and future customers, the possible opportunities for growth, their existing capabilities and the way they have evolved together (Leinw and Mainardi, 2011). Leinw and Mainardi (2011) continually explained how a company can be competitive. They suggested that companies focus on their capabilities and continually improve them to strengthen their competitive advantage. Their employees become more skilled and their systems growth in depth. This enables them to achieve the top line of grow in their industry since it allows them to continually outperform their competitors.

4.5 Competitive Advantage Models

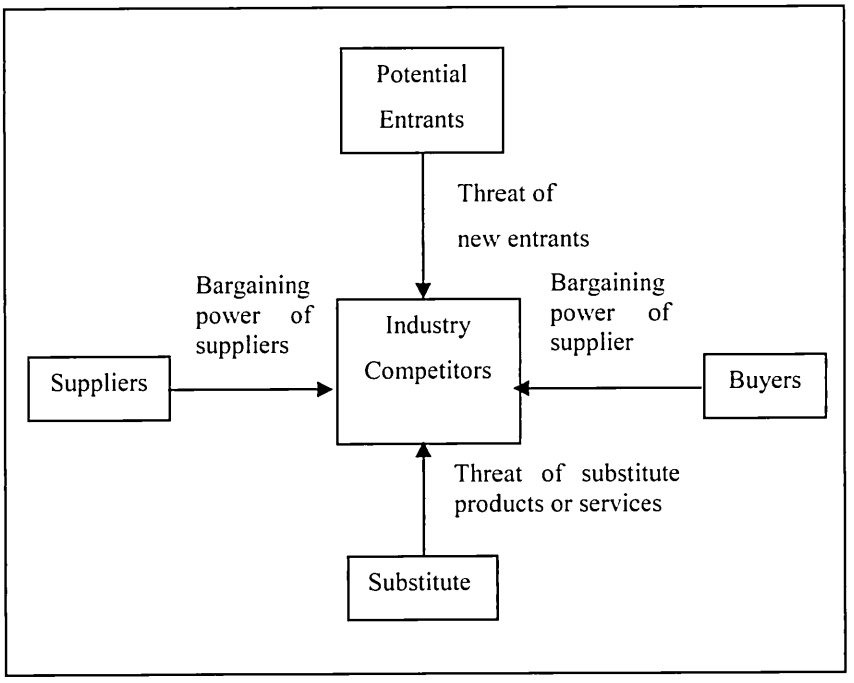
Researchers have developed models that help to achieve competitive advantage. These models are discussed in brief in this section.

4.5.1 Five Key Factors Model

Porter (1980) classified the five key factors for industry success and suggested that companies can gain significant competitive advantage over their rivals by

diminishing the power of suppliers or buyers, holding off new entrants into the industry, lowering the possibility of substitution for products, and gaining a competitive edge amongst existing firms in an industry (Bocij et al., 2009) (see Figure 4.1).

Figure 1.1 Five Key Factors Model



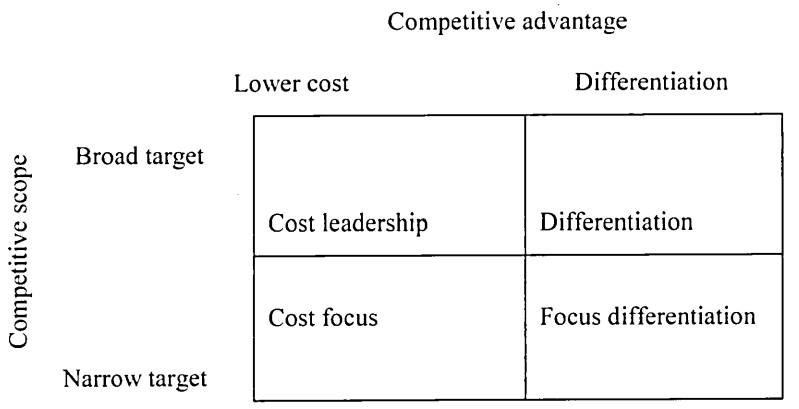
Adopted from: Porter. 2004.Competitive advantage: creating and sustaining performance. Free Press. P.4.

The five key forces as shown in Figure 4.1 above, which make up the industry structure, are the bargaining power of suppliers, the bargaining power of buyers, the threat of new entrants, the threat of substitute products, and rivalry among existing firms. These five factors establish the ability of companies in an industry to earn rates of return on investment in excess of the cost of capital (Porter, 2004).

4.5.2 Competitive Scope (Porter's Generic Strategies)

Porter (2004) also proposed a model which suggests three generic strategies: cost leadership, differentiation, and focus. The focus strategy has two variants; cost focus and focus differentiation, as shown in Figure 4.2 below.

Figure 1.2 Porter's Generic Strategies Model



Adopted from: Porter. 2004.Competitive advantage: creating and sustaining performance. Free Press, P.12

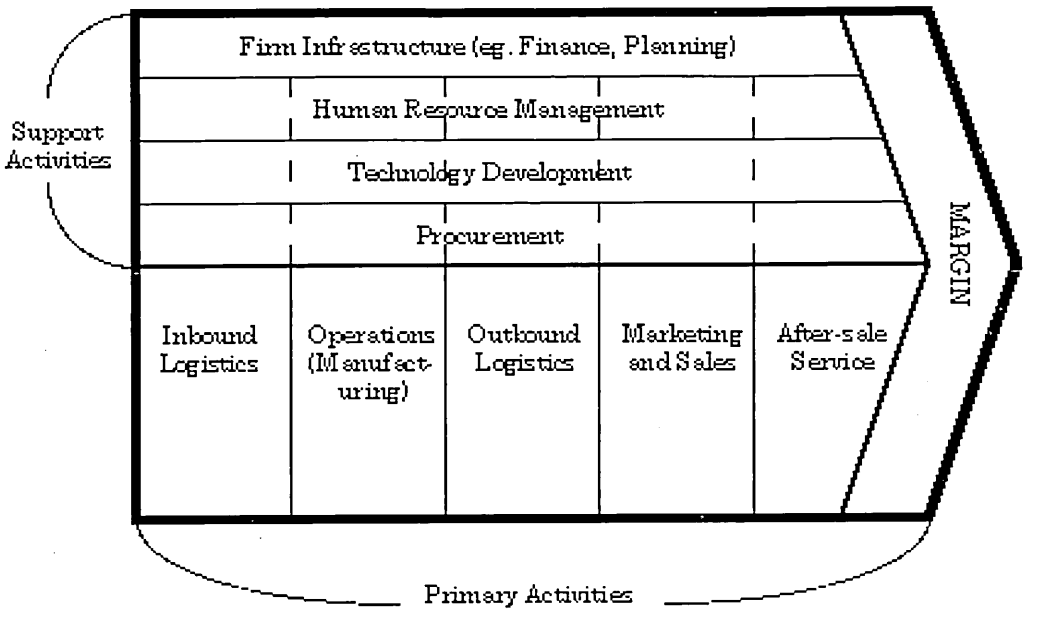
According to Porter (2004:38) the focus strategy "*rests on the premise that the firm is able to serve its narrow strategic target market more effectively or efficiently than competitors who are competing more broadly. As a result, the firm achieves either differentiation from better meeting the needs of the particular target, lower costs in serving this target, or both*" it aims to cost advantage (cost focus) or differentiation (differentiation focus) in a narrow segment. Competitive scope is the breadth of the company's target market within an industry. Companies can have basic types of

competitive advantage that are related to low cost and differentiation (Hemmatfar at el., 2010). The significance of any strength or weakness possessed is ultimately a function of its impact on relative cost or differentiation (Wit and Meyer, 2010:338). However, a generic strategy model may help companies understanding these different strategies which may be used to achieve their competitive advantage.

4.5.3 Value Chain

The Value Chain is a very important concept that emerged out of the Harvard Business School, developed principally by Porter. Each company is a compilation of activities that are used to design, produce, market, deliver, and support its product.

Figure 1.3 Value Chain Model



Adopted from: Porter. 2004.Competitive advantage: creating and sustaining performance. Free Press, P.37.

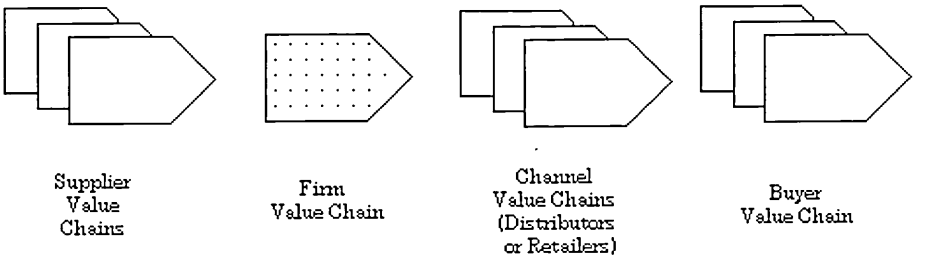
As shown from Figure 4.3 above, the activities performed and used by a particular company can be analysed into primary and secondary/support activities. The primary activities are defined as inbound logistics, operations, outbound logistics, marketing and sales, and services while secondary or support activities are related to the infrastructure of the firm, human resource management, technology development, and procurement. In summary, the value chain model describes the activities within and around an organisation, and links them to an analysis of the competitive strength of the organisation. Therefore, it evaluates which value each particular activity adds to the organisations products or services.

This model is used by Porter to discover competitive advantage by using the differentiation and cost strategy. He also identifies the significance of the relationship between differentiation and between support systems and primary value building activities. He then explains that an information technology value chain supported by information technology is the key characteristic of a value chain, "Since every value activity creates and uses information". He argues that change "in the way office functions can be performed is one of the most important types of technological trends occurring today for many firms, though few are devoting substantial resources to it. A firm that can discover a better technology for performing an activity than its competitors thus gains competitive advantage" (Porter, 2004).

4.5.4 Industry Value Chain

This model is reviewed in this section again as one of a competitive advantage model that will help understand how organisations can use it to their benefit in competition. The enterprise's value chain for competing in an existing industry is embedded in a larger stream of activities termed as "value chain systems" (Porter, 2004:34). All parts of an industry's value system are linked. IT can have an impact on this value system by reducing costs, or accruing income margins (across suppliers, customers, and distribution channels) which companies can share, as result of the deployment of technology systems (see Figure 4.4 below).

Figure 1.4 Industry Value Chain



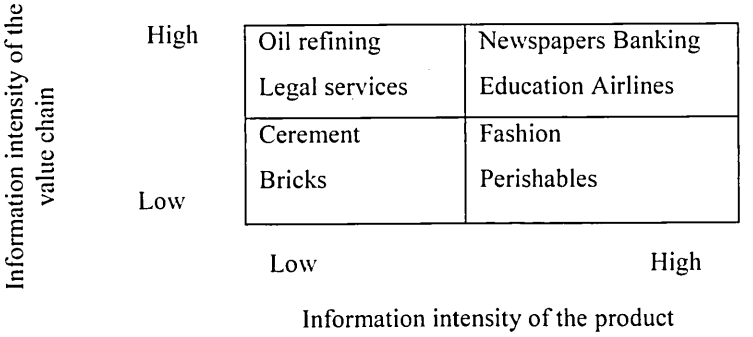
Adopted from: Porter. 2004.Competitive advantage: creating and sustaining performance. Free Press, P.35.

The model of a value chain can be used to reduce the cost or accruing income margins through suppliers, customers, and distribution channels to the buyers. Laudon and Laudon (2006) explained how the company can use a value chain to achieve competitive advantage at the industry level by analysing the different stages in the value chain of the company itself helping to identify the applicant applications of information systems. The second step after having a list of applicant applications then it can decide which to develop first. The third step is developing the important application by making improvements in this company value chain that might be missed by other competitors, and then a company can achieve competitive advantage by attaining operational excellence, lowering costs, improving profit margins and forging a closer relationship with customers and suppliers. The company after following these steps and finding that other competitors are acting similarly will know they are not in competitive advantage.

4.5.5 Porter and Miller's Information Intensity Matrix

Porter and Miller's Information Intensity Matrix (1985) as in Figure 4.5 below offers a tool that can help companies to assess their information content for decision making, in the context of their industry and business. It can be used to show information that is strategically important. They use a matrix to identify the role information plays in product offering as well as the process used to deliver the products to customers. This model also measures the level of information used in supporting business processes. The main idea of this model is that it could clarify the way of specific IT applications in improving several links in the value chain, whether in internal operations or in the external marketplace and thus enable the business to achieve a strategic advantage (Tan and Theodorou, 2009:6).

Figure 1.5 Porter and Miller's Information Intensity Matrix



Adapted from: Porter. Rajola, 2013. IT is Business: Some Emerging Reflections and IT Governance of CRM Projects. in Customer Relationship Management in the Financial Industry, Management for Professionals. Springer-Verlag Berlin Heidelberg. P 10.

In Figure 4.5, there are two axes: one measures the information intensity of the product, and the other measures the information intensity of the value chain. The categorisation is useful to indicate the degree of IS that might be applicable to an industry based on its level of information intensity and in its contribution to the value chain. It also, de facto, gives relevance to the development of IS Strategy in relation to that context. Industries that are low in information intensity on both axes are less concerned with the strategic uses of IT than those who score highly in both.

4.5.6 Strategic Thrusts

The theory of Strategic Thrusts developed by Wiseman (1985) helps to identify how a company's information resources can be used for competitive advantage thus building upon Porter's Generic Strategies and other concepts. The heart of this model is five strategic thrusts organizations use to gain competitive advantage. The five strategic thrusts are: differentiation focus on resources, unfilled product or service opportunities., cost focus on reducing costs or increasing competitor's costs, innovation focus on creating new products or new ways to sell, create, produce or deliver products/services, growth focus on increasing size of the market or adding more value activities in the value chain, and allying along with other groups to create a more competitive position. The so called strategic thrusts model is because the strategies can be applied with direction (offensive or defensive) and also has degrees of intensity (major or minor). The company has two choices for the mode of

a strategic thrust. It can act offensively to improve its competitive advantage or it can act defensively to reduce the opportunities available to competitors.

Figure 1.6 Wiseman' s Strategic Thrust Model

	Strategic Target		
Strategic Thrust	Supplier	Customer	Competitor
Differentiation			
Low cost			
Innovation			
Growth			
Alliance			

Adopted from: Rackoff, N. Wiseman, C. and Ulrich, W. A.. 1985. Information Systems for Competitive Advantage: Implementation of a Planning Process., MIS Quarterly 9(4): P.287.

Figure 4.6 above presents the Strategic Thrust model as a grid. It describes three targets on which the company can focus its strategic thrusts: suppliers, customers, and competitors. This model is known as a generator of strategic options. The Strategic Thrust Model can be extended to Porter's generic strategy because it uses two of the generic strategies; differentiation and low cost strategy. The five strategies used in this mode are linked with strategic target: suppliers, customer and competitor to gain competitive advantage. Furthermore, a generic strategy model and strategic trust model focus on the same purpose but by using different ways. Strategies from the grid can be ascertained by asking a number of questions including:

- What is our strategic target?

  Suppliers- Customers- Competitors

- What strategic thrust can be used against the target?

  Differentiation – Cost- Innovation – Growth- Alliance

- What strategic mode can be used?

  Offensive- Defensive.

- What direction of thrust can be used?

  Usage- Provision.

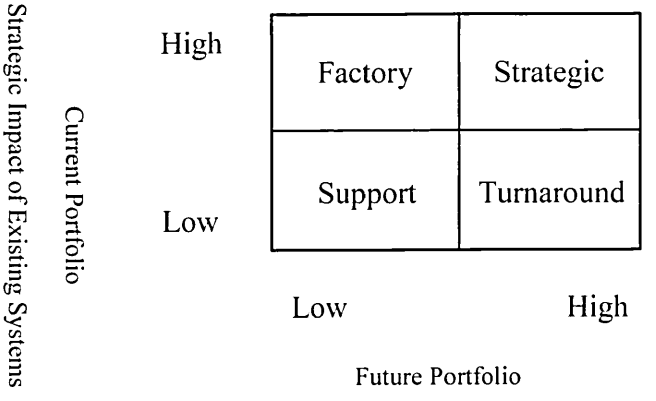
Rackoff et al. (1985) suggested that information technology can be used to support or shape the company's competitive strategy by supporting or shaping strategic thrusts. Strategic thrusts, therefore, constitute the mechanisms for connecting business strategy and information technology.

4.5.7 Strategic Grid Model

This model was developed by Mcfarlan in 1983 and is used to guide the executives with an analysis of the IT portfolio of projects in the organisation. Mcfarlan suggested that IT can be analysed through two axes: the strategic impact of existing systems and the strategic impact of applications development portfolio. It is divided into four dimensions based upon their current and future contribution to business

objectives - factory, support, strategic, and turnaround, as shown in Figure 4.7 below.

Figure 1.7 Strategic Grid Model



Adpoted from: Mehdi Khosrow-Pour. 2003. *Issues and Trends of Information Technology Management in contemporary organisations*. Idea Group Publishing. USA. P.412.

4.6 Evaluating of Competitive Advantage Models

There are a number of studies that focus on the competitive advantage model and discuss the usefulness of these models. Starting with the five key forces model, it has special contribution that reveals what competition is like in a given market; the strength of each five competitive forces; the nature of the competitive pressures comprising each force; and the overall structure of competition (Thompson and Strickland, 2003:92). Warr (1990) stated that the five key forces model offers great value to IS strategy. It allows for the identification of the competitive forces in the industry and also allows those developing the strategic direction of IS. This helps to

question the ability of information systems in reducing each of these forces such as reduction of the power of suppliers or the creation of barriers to entry and the prevention of new entrants. However, Rice (2010) studied the risks faced by the organisations when they adopted the five key forces model and categorised them in three categories, internal organisation risk such as task sharing, personnel loads, cross training, assignment duration, and related parameters; industry risk such as contractor and subcontractor organisations, technology maturity, product support, and contractual matters, and thirdly information risk such as software availability and functionality, information system backup, and network security. Grundy (2006) identified the attributes and limitation of Porter's forces model as the following. The attributes are 1) it reviewed the micro-economic theory into five key impacts. 2) It shows clear function between (competitive rivalries) the force in the centre of the model and the other four forces. 3) It effectively and before its time applied 'systems thinking'. 4) The long-run rate of returns can be predicted in a specific industry by using this model. 5) It went beyond a more simplistic focus on relative market growth rates in determining industry attractiveness. 6) Can be used in industry boundaries via entry barriers and substitutes to combine input–output analysis of a particular industry. 7) It highlighted the importance of searching for imperfect markets, which offer more national opportunities for superior returns. 8) It helps to determine relative market attractiveness by highlighting the importance of negotiating power and bargaining arrangements. And 9) it helps managers focus on the external environment more than traditional 'SWOT' analysis. However, the

limitations are having difficulty in linking directly to possible management action such as where companies have apparently low influence over any of the five forces, or how they can set about dealing with them, It oversimplifies industry value chains, it tends to encourage the mind-set of an 'industry' as a specific entity with new boundaries. This is perhaps less appropriate now where industry boundaries appear to be far more fluid, It appears to be self-contained, thus not being specifically related, for example, to 'PEST' factors, or the dynamics of growth in a particular market, and it is couched in economic terminology, which may be perceived as too much jargon from a practising manager's perspective and indeed, it could be argued that it is over-branded. Porter's generic strategic model is commented on by different researchers, for example Partridge and Perren (1994) argue that Porter's definition of "low cost leadership" is useful for companies seeking low cost leadership in the market via low cost production or supply. David (1997) argues that the effective focus strategy can be offered when consumers have distinct preferences, or competitors overlook the niche, and in another study by Dess and Davis (1984) , on the U. S. paint industry, they suggested that successful clusters of firms either possessed a differentiation or cost leadership strategy (with or without focus) not both. But do strategy clusters always display such disjointedness among these generic competitive types. Another comment in generic strategies model discussed in Hambrick (1983a) study, he concluded in his analysis of capital goods producers realised cost leadership, broad-based differentiation and focus strategies among his high performing firms that only clusters showed a single (or no) strategic

position — either by differentiation or cost leadership, but never both. This might have been due to Porter's (1980:41) contention that firms avoid a "stuck in the middle" position. Here companies may be torn between differentiation and cost leadership but cannot attain both simultaneously due to resource restriction. Differentiation is expensive and thus impedes cost leadership; cost leadership requires resources and efficiency that could severely limit the options for differentiation. Furthermore, Hambrick (1983b:688) argues "Porter's classification of generic strategies is especially useful, because (1) it builds on prior findings and (2) it is appropriately broad, but not unclear. In general, generic strategies are commented that they lack flexibility, lack specificity, and they are limited.

In addition, Earl (1989) commented on Porter and Miller's matrix that it can be used to forecast the scope, degree and rate of change induced by IT for different industries. He pointed out that awareness frameworks tend to have high academic value in raising the understanding of executives, and IT professionals, for strategic use of information technology. It provides no more than a high level checklist and a possible prompt for IT applications. Porter and Miller show broadly what possibilities are afforded by IT- but they are generally too high level and too descriptive to guide users to specific opportunities for strategic information systems. Earl (1989) also commented on the strategic thrusts model that helps most in clarifying the firm's business strategy and suggesting the direction of the IT-strategy.

The value chain model is also a part of discussion in the literature and has attracted several comments and arguments such as, Hus and Pan (1998) who argue that the value chain is significant because it focuses on value adding activities of an organisation directly, and helps to pitch information systems correctly into the value adding domain instead of cost cutting. However they also identified the weakness of the value chain in several points, firstly it fails to address the issues of implementation and development an information system. Second, it fails to define a data structure for the firm because it concentrates on internal operations rather than of data. Third, the concept of this model is hard to use by nonmanufacturing organisations where the product is not tangible and there are no obvious raw materials. Fourth, there is no automated support in value chain that helps to carry out analysis. Kaplan (2012) states that value chain model is more appropriate for use in the industrial environment but equally can be difficult to apply to a service provider. He added that it was identified as a quantitative analysis. It required recalibrating the accounting systems because it needed to allocate costs to individual activities which is a time consuming process. Also Hindle (2008) argues that there is difficulty in identifying the value activities because an unclear definition of them leads to a struggle in comparing and contrasting them with rivals and thus discouraging ways of gaining competitive advantage. Value chain analysis was criticised in several areas as 1), availability of data related to using internal data are derived from a single period but long term may not readily be available. 2) Difficulty in identifying the stages in an industry value chain because they are limited by the ability to locate

at least one firm that particulars/ specialises in a specific stage, 3) Dividing cost drivers difficulty presents challenges to the value chain. 4) Struggling to understand the value chain analysis by employees and managers. (http://www.transtutors.com/homework-help/cost-management/value-chain analysis/value-chain-limitations.aspx).

Furthermore, Malek (2009) suggested that the strategic grid model with different quadrants demands different kinds of project governance: the failure of many projects may come about because the quadrant they lay in was misidentified and inappropriate governance was applied to them. Conversely, Agbamuche (2008) stated that this model enables an assessment of how well IT is aligned with the goals of business strategy which could be useful because it helps in providing different approaches to organise and manage IT. Warr (1990) argues that users of the strategic grid model sometimes had difficulty in placing applications correctly in the four categories in the grid. The users can hold different views on the future strategic contribution of a system and may differ upon its current contribution. Also sometimes an application may fall between the grids. Again it has to be stressed that the objective is not to use the strategic grid properly but to gain strategic insights into how to manage the applications portfolio.

In conclusion, most of the competitive advantage models come from Porter's competitive strategic framework consisting of the five external threats and three generic strategies. After that, researchers argue that IT could be used in an offensive

or defensive fashion to face the competitive threats effectively. Then authors suggested how a firm can put the generic strategies into practice through the use of value chain in Porter and Miller matrix model. Researcher (McFarlan, 1983) also delineates the differences in the strategic relevance and impact of IT. This identifies four different IT environments which are referred to as categories of strategic relevance and impact in the strategic grid model. However, these frameworks are useful tools for workshops and in management development events or in real-world strategic systems research. These models give an essential environment that can apply when other tools are used, while their application needs the context in which general managers or strategy analysts have already thought about the enterprise in this way (Earl ,1989). Indeed, these frameworks are used as a structure for analysing complex systems, shorthand for complex relationships, for clarifying dimensions of importance, and making clear the relation between business strategy and information technology(McFarlan , 1983).

4.7 Conclusion

Competition between companies is becoming more intensive, markets in globalisation are creating new opportunities to these companies, but it also creates new threats to them in the other side of competition. Companies are identifying as to how they can leverage their resources which helps them to adapt to the new updates. They are also researching and creating new winning formulas. This chapter has introduced the second variable in this research - competitive advantage. It began by tracing the meaning and types of competitive advantage, then explained how

companies can gain competitive advantage. It explains how such capabilities are playing a role in creating sustained competitive advantage Several frameworks were described intended to assist understanding of the use of SIS based on industry organisation to achieve competitive advantage, value chains, and strategic thrusts. Organisations seek competitive advantages over other competitors along the whole industry value chain. Generic strategies have been proposed and the Strategic grid was also explained, followed by an evaluation of these models. The following chapter seeks to link the two factors in this research, IT and competitive advantage and to close the circle of this research.

CHAPTER FIVE

IT AND COMPETITIVE ADVANTAGE: DEVELOPING A CONCEPTUAL MODEL

5.1 Introduction

Competitors struggle with each other for market share, profits and dominance. Hence, understanding how technology affects competition is crucial for companies that need to manage technology. These companies are working in economic competition which is constantly changing and not all have the same opportunities. This chapter links information technology (IT) and competitive advantage, the main variables in this research study, to understand the importance of IT and how it can affect competitive advantage. It also tries to clarify the relationship between these two variables. Following this introduction section, 5.2 discusses how IT grew and why it is important. Section 5.3 explains how IT affects competitive advantage. It may help to find a relation between IT and competitive advantage and how IT can help a company to achieve competitive advantage. Section 5.4 reviews some research in information systems and competitive advantage to highlight the important factors in achieving competitive advantage by using IT.

5.2 Information Technology (IT)

Information technology is becoming more and more important to companies. Organisations understand this fact and know they can use the role of information not just in their daily activities but also in long term strategic planning and decisions.

Therefore, the companies nowadays are spending more on information technology management systems (Carr, 2003).

Information technology (IT) has grown through different stages since the 1960s: first, in the 1960s and 70s companies focused on using IT to increase efficiency; in the 1980s the focus shifted to using IT to increase worker productivity through the use of PCs; in the 1990s client-server technologies were used to improve the competitive position of the organisation and in this century, IT is being utilised to create value for the corporation. These stages are shown on Table 5.1 below.

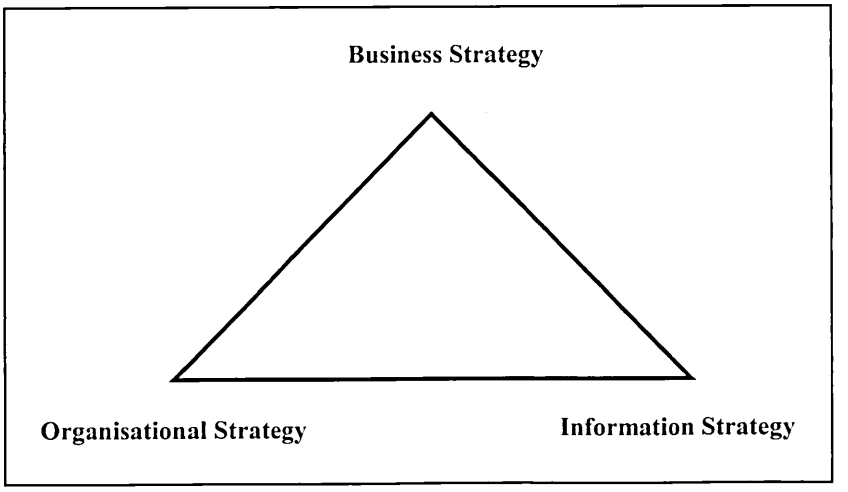
Table 2.1 IT Growing Stages between 1960s and 2010s

	1960s	1970s	1980s	1990s	2000s
Primary Role of IT	Efficiency	Effectiveness	Strategic	Strategic	Value creation
Justify IT expenditure	Return on Investment (ROI)	Increasing productivity and decision making	Competitive Position	Competitive position	Adding Value
Target of systems	Organisation	Individual manager/ Group	Individual manager/group	Business processes	Customer, supplier, ecosystem
Information model	Application specific	Data-driven	User-Driven	Business-Driven	Knowledge-driven
Dominant technology	Mainframe-based	Minicomputer-based	Microcomputer "decentralized intelligence"	Client-Server "distribution intelligence"	Internet "ubiquitous intelligence"

Adopted from: Keri E. Pearlson and Carol S. Saunders.2006. Managing and using information systems : a strategic approach. 3rd ed. John Wiley and Sons. P 48.

Earl (1993) describes the growing importance of IT in the organisation and identifies nine reasons: 1) IT involves high costs; 2) it is critical to the success of many organisation; 3) it is now used as a necessary part of the commercial strategy in the battle for competitive advantages; 4) IT is required in the current economic context; 5) it affects all levels of management; 6) it has brought about a revolution in the way information is both created and presented to management; 7) IT involvement means stakeholders, not just management, not just within the organisation; 8) the detailed technical issues in IT are important and lastly IT requires effective management, as this can make a real difference to successful IT use. Also, Pearlson and Saunders (2010) suggest a framework to clarify the importance of information systems in the current organisations named Information Systems Strategy Triangle as shown in figure 5.1 below.

Figure 2.1 Information Systems Strategy Triangle



Adopted from: Pearlson. and Saunders. (2010). Managing and Using Information Systems: A Strategic Approach, 4th ed. Hoboken, New Jersey: John Wiley and Sons, Inc. P 23.

Figure 5.1 shows Information Systems Strategy Triangle framework. That presents three importance elements: business strategy, organisational strategy and information strategy. According to Pearlson and Saunders (2010:23) the direct or implied suggestions about strategy derived from the framework and includes the following:

1. Successful firms have an overriding business strategy that drives both organisational and information systems strategy.
2. IS strategy can, itself, affect and is affected by changes in a firm's business and organisational strategies. Changes in the IS strategy must be accompanied by changes in the organisational strategy and must accommodate the overall business strategy.
3. IS strategy always involves consequences, intended or not, within business and organisational strategies.

5.3 IT and Competitive Advantage

In the last decades the position of IT faced rapid change. Previously it was used only as a support tool in the company then became one of the important resources for gaining and sustaining competitive advantage (Porter and Miller, 1985). Therefore, understanding how technology affects competition is important for companies that need to manage technology because, as Hemmatfar et al. (2010) stated, knowledge management becomes a major factor for competitive advantage. The companies

should focus on their IT/IS to achieve competitive advantage. IT offers new management and business opportunities which empower a company to gain competitive advantage, improve their productive and business performance, help find different ways of managing and organising and create and develop new business (Peppard, 1993).

Nowadays, companies are working in an economic environment which is constantly changing but all these companies do not have the same opportunities (Porter, 2004). The competition is becoming more dependent on the effective use of IT to manage the resource of information systems, with the largest opportunities that face the companies in their lives. They could miss some of these opportunities because they fail in the planning and organising for the long term impact of IT on the productivity of the company. Based on the increasing level of the dependency on IT, rapid expense can create competitive advantage (Smaczny, 2001). However, Avison et al. (2004) suggested that when companies fail to gain advantage from IT this may result in a decrease in company performance and viability.

Although different technologies provide the productive knowledge basis of a business, technology itself is a competitive factor of change. When technology is stable, all competitors remain at a relatively equal level of competitive advantage. When technology changes, opportunities exist for companies to forge ahead and gain advantages especially when they are early adopters. When technology is changing, management and technical services need to work together strategically. Historically,

only a few firms at any one time appear to be successful in gaining a positive competitive advantage from technological change (Hemmatfar et al., 2010).

Moreover, researchers have determined that technology affects the role of competition in different ways: a) the structure of industry can be affected by advances in technology, b) Technology becomes an essential lever for building new competitive advantage, c) the information revolution helps to generate new businesses (Mahmood and Szewczak, 1999:239). These changes are made in the role of competition clarifying the technology influence on working in the industry specifically with effective responses. Furthermore, technological change helps in improving competitive advantage but it may affect organisational structure if the company just copies and imitates this technology without taking into account the suitability of this technology with their goals (Porter, 2004). Porter argues that the main effect of technological change on the structure of an industry does not allow the industry to establish a new technology. Therefore, the organisation should study the impact of the new technology on their industry's structure before adopting this technology (Nicholas, 2004). Technological change helps in the growth of the economy's value of scale. For example, flexible manufacturing systems often have the effect of reducing scale economies (Porter, 2004). Technology helps also raise economies, increase the investment in new frames or models and develop production and services (Edward, 1997). Technological change is also the basis of the learning curve which comes as a result of improvement in types of technological change such as layout yields and machine speeds (Nicholas, 2004). In addition, technological

change enables greater product differentiation in an industry. It helps to change the level of cost in the company (Bocij et al., 2009) and the results of these changes in the technology and markets and the new business models appear to produce changes in the structure of the industry (Deise et al., 2000). Technological choices determine buyers' requirements for employee training or new investment in equipment when switching suppliers (Mahmood and Szewczak, 1999). Also, distribution channels can affect technological change in two ways: by allowing competitors to avoid existing channels and for companies to become more dependent on these channels (Porter and Millar, 1985).

However, different IT applications and tools are used in order to make companies become more competitive. Researchers have argued that significant percentages of organisation sales are devoted to using IT products and the experts on IT believe that efficiency and effectiveness can be achieved in the organisation by employing IT in proper directions (Bidgoli, 2011). Porter and Millar (1985) suggested that IT lowers costs of products and services and that if the company uses the technology correctly, it can assist with differentiation and focus strategies, too. Indeed, IT can help bottom-line and top-line strategies by reducing the overall cost. It helps the bottom-line strategy to become more efficient and for top-line strategy, it offers new products and services to customers and increases revenues by selling existing products and services to new customers generating new revenues (Bidgoli, 2011). Furthermore, Ahmadpour et al. (2011) identified eight factors of IS used in the companies which help to achieve competitive advantage as follows: innovation

applications; competitive weapons; changes in process; links with business partners; cost reductions; relationships with suppliers and customers; new products; and competitive intelligence. Furthermore, IT is becoming more important strategically because it affects the strategic choice facing a company. Lastly IT offers critical and sufficient information through the expert systems and executive information systems (Peppard, 1993).

5.4 IT and Porter's Competitive Advantage Models

This section explains the roles that IT plays when using the three main competitive advantages model developed by Porter: five forces, value chain and generic strategy. These models are the basis of most of the competitive advantage models as mentioned in chapter four.

Firstly, the importance of IT in five forces is that it can change the impact of these forces and also helps a company react and protect itself against the five forces. Also Kearns and Lederer (2004) stated that the five forces can be affected by IT in different ways such as raised entry market barriers and increased customer switching costs; changes the basis of the competition and the balance of power in a buyer/supplier relationship. Additionally IT can help a company reduce the power of suppliers by using some IT programs such as Just-In-Time and EDI which offer different features such as enhanced information flow, reduce the inventory cost and guarantee smoother interaction. Also the power of buyers can be changed by IT using systems that collect and analyse trends and attitudes of buyers (Peppard,

1993). Porter and Miller (1985) suggested that when a firm implemented and used technology in their production system they will have the possibility to introduce new and different products and also achieve economies of scale. Consequently IT will help them speed up their production process and decrease the production cost.

Secondly, IT can play an important role in the value chain by linking the value chain activities, performing optimisation and control functions as well as judgmental executives' function. It could be used to enhance the capability of the company to create more integration between internal and external activities in the value chain. Based on this integration a company can organise their activities in effective ways between their buyers and suppliers (Porter and Miller, 1985). Papp (2004) added that IT is becoming the global tool in the connection process between the company and its buyers and suppliers. Also IT can affect the internal activities to gain competitive advantage. The high level of exploiting IT at different levels within the company indicated that IT supports most of the business activities of the company (Shin, 2002). The contribution of IT can be observed through supporting such activities efficiency and quickly and also helped to improve information flow through the primary activities.

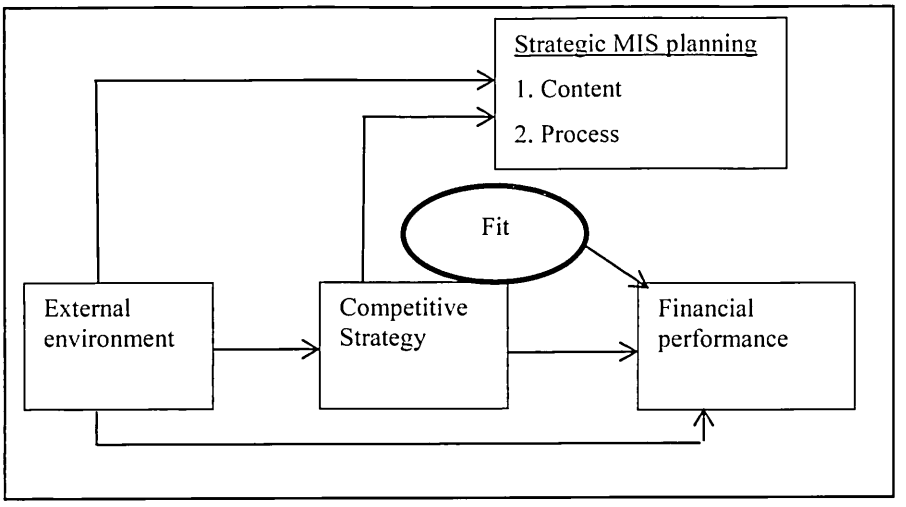
Finally, as IT helps companies to gain a different view of their rivals and based on this fact it becomes an important element in the pursuit of competitive advantage. According to Porter and Miller (1985) companies have to perform their activities by using a low cost strategy or a differentiation strategy in order to achieve competitive

advantage. IT plays a significant role in helping such generic strategies by internal process efficiency, production and inventory cost reduction and better utilisation of resources at cost strategy. IT helps to gain a differentiation strategy by offering opportunities to access new markets and customers and introduce new horizons to produce differentiated products and services (Porter, 2004). Also IT can help in focus strategy, by providing information of patterns and tendencies of their customers, pointing out the volatility of customers and preferable products such as club cards and memberships which provide more information about the customers.

5.5 Development Alignment Model Research

The section summarises research in IS and competitive advantage that is a developed alignment model between business strategy and IT strategy dimensions. Das et al. (1991) developed model links between strategic MIS planning and business strategy and related them to competitive advantage (see Figure 5.2). They used both the content and process dimensions of MIS strategy to achieve their objectives. The content dimensions were distinctive competence, information systems technology, systems design and development, and MIS infrastructure. The process dimensions were formality, scope, participation, influence, and co-ordination. Das et al. (1991) specified inductively the dichotomous nature of the dimensions of IS strategy and as a result they extended the scope of the dimensionality of the IS strategic planning. Das et al. (1991) emphasised that a fit between competitive strategy and strategic IS planning is necessary for superior financial performance.

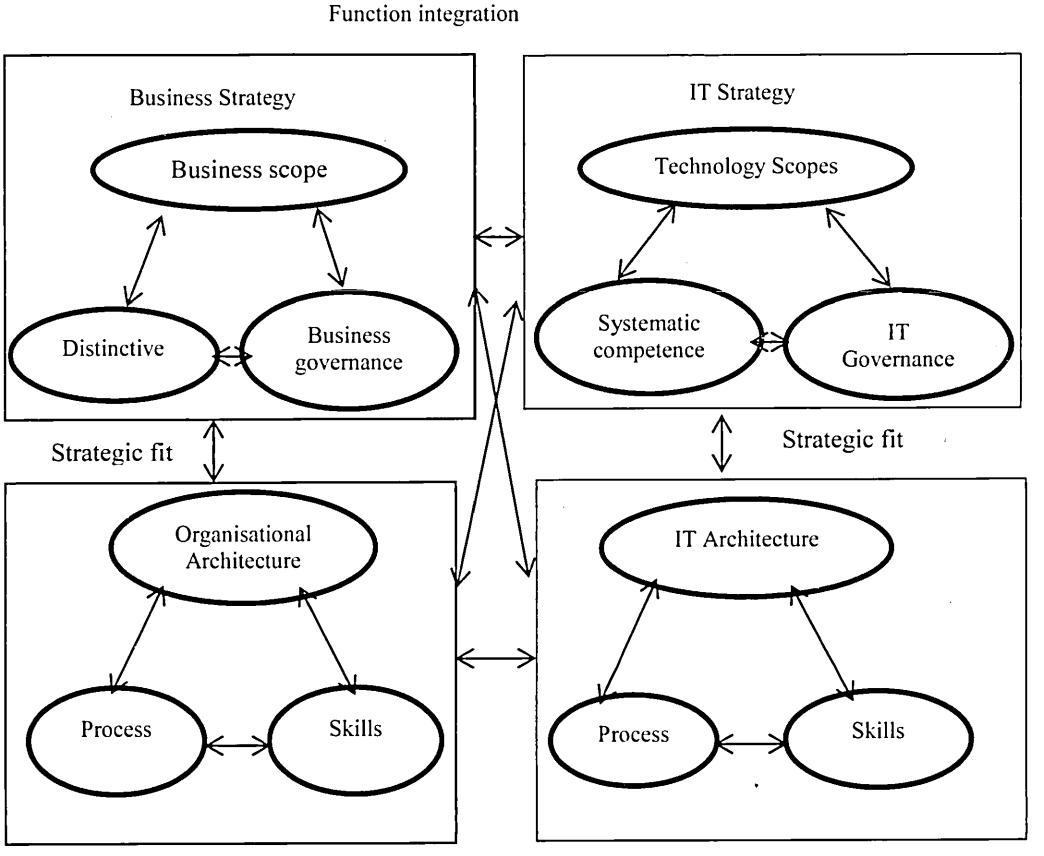
Figure 2.2 Das et al (1991) Model



Adopted from: Das, S.R, Zahra,S.A and Warkentin, M.E.1991. Integrating the content and process of strategic MIS planning with competitive strategy. Decision Science. 22(5): P 955.

Figure 5.2 above presents Das et al's (1991) framework used to align business strategy and IT strategy. This model links external environment, competitive strategy, strategic MIS planning and financial performance. Also it shows the concept fit between strategic MIS planning and competitive strategy as the essential element linked between these two variables. Henderson and Venkataman (1992) studied the alignment between IS strategy and business strategy and also between the content and process dimensions of both IS strategy and business strategy. They developed a framework to achieve the objective of their study as shown in Figure 5.3 below. They used information technology, systematic competencies, and IT governance as the content strategy dimensions and architecture, processes, and skills as the process strategy dimensions. They specified the need for a bivariate fit between the IS strategy content and process dimensions.

Figure 2.3 Henderson and Venkatraman Framework

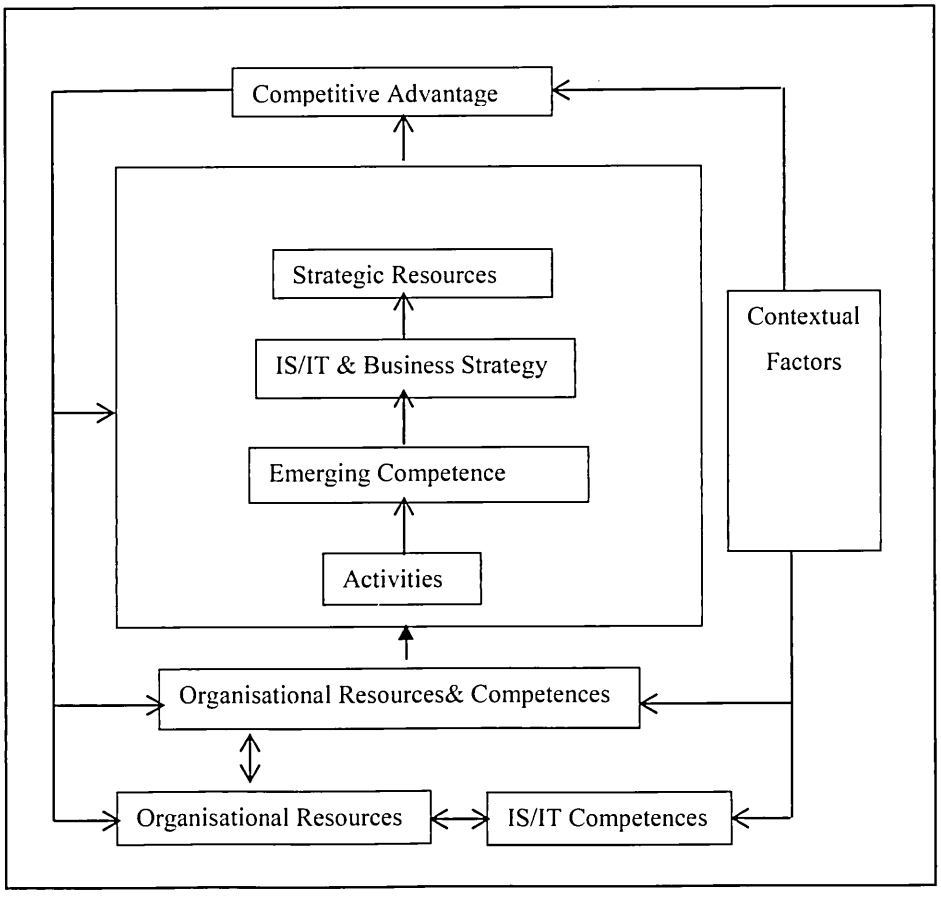


Adopted from: Henderson, J and Venkatraman, N. 1992. Strategic Alignment: A model for organisational transformation through information technology. In. Kochan, T and Unseem, M eds, Transforming Organisations. Oxford University Press. P. 99.

Figure 5.3 demonstrates the strategic alignment model developed by Henderson and Venkatraman Framework (1992). It shows the four key domains of strategic choice: business strategy, organisational infrastructure and processes, IT strategy and IT infrastructure and processes. It shows also the several types of strategic fit that can be classified as bivariate fit (relationships involving any two domains), cross-domain alignment (relationship involving three domains) and strategic alignment

(relationship involving simultaneous or concurrent attention to all four domains). Kermanshah (1997) studied the information system strategy for competitive advantage as a resource-based perspective. This research provided a critical analysis of IS strategy theory and proposed an integrative framework for the analysis of IS strategy for competitive advantage as shown in Figure 5.4 below. It used a case study approach to serve as an empirical reference for testing the efficacy of the IS theory and developing an improved theory perspective.

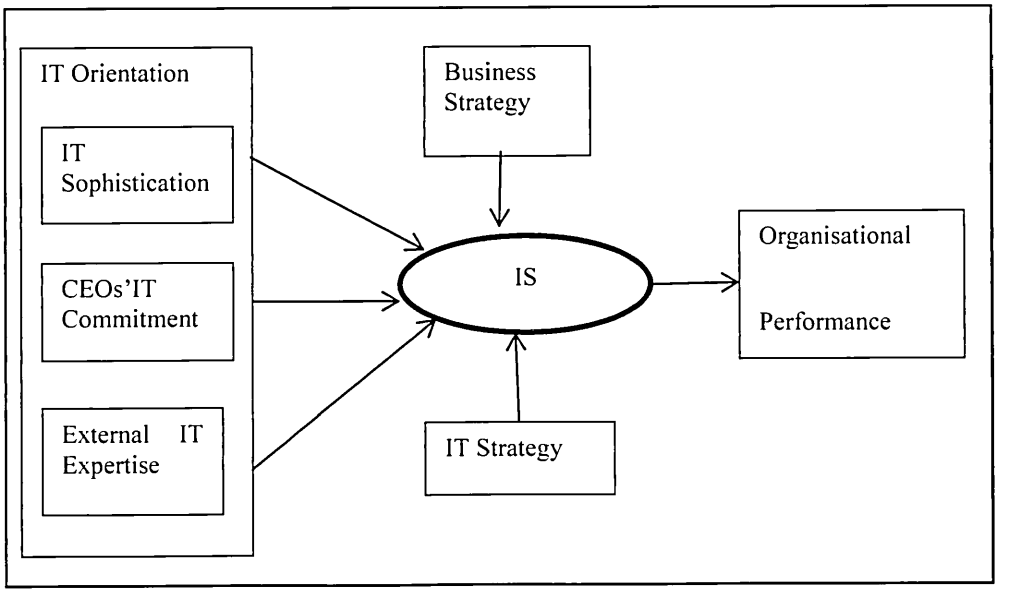
Figure 2.4 Kermanshah's Framework for ISS for Competitive Advantage



Adopted from: Kermanshah, A. 1997. Information System Strategy for Competitive Advantage: A resource-Based Perspective. Unpublished PhD thesis. School of Management. University of Manchester. P. 149.

Figure 5.4 above shows the based framework developed by Kermanshah (1997) for IS strategy for competitive advantage. It shows the key variables to compete: organisational resources, capabilities and competencies, IT/IS resources and competencies, contextual factors, the strategic development, strategic resources and competitive advantage. Hussin et al. (2002) studied the alignment between business strategy and IT strategy in small businesses in the United Kingdom using the content dimension in their research. They found there is alignment between business strategy and IT strategy; there is positive impact on organisational performance from this alignment in SAM companies. As a consequence they developed a model for alignment business strategy and business strategy, shown in Figure 5. 5 below

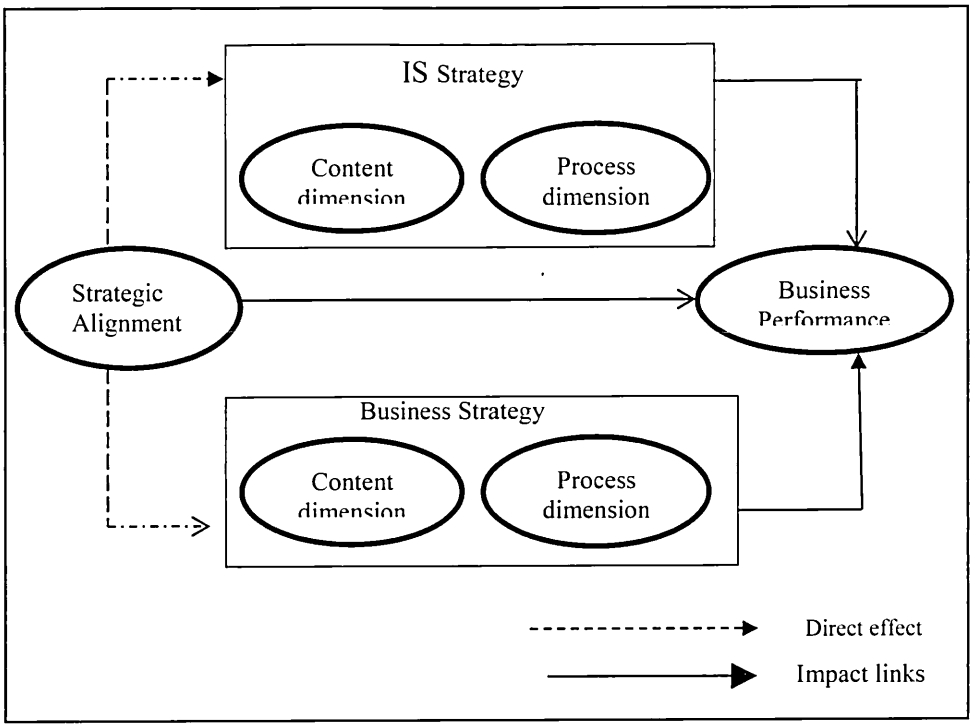
Figure 2.5 Strategic Alignment Model



Adopted from: Hussin, H. King, M. and Cragg, P. (2002). IT alignment in small firms. European Journal of Information Systems, 11, P.110.

Figure 5.5 above shows that the three main variables used in this research are organisational performance and IT orientation. IS alignment refers to the match fit between business strategy and IT strategy. Also Shu (2002) studied a structure model of strategic alignment between information systems and business strategy. The main objective of this research is to establish a model that would investigate the structural relationship between IS strategy, business strategy, and organisational performance as shown in Figure 5.6 below. He also studied the theoretical conceptualisation that an alignment or strategic fit between these constructs would have a positive impact on the business performance of organisations. It tried to provide and develop instruments to measure the alignment between IS strategy, business strategy and its impact on organisational performance. It used a questionnaire survey that was distributed in the banking, financial services and shipping logistics industry. Shu (2000) developed an Integrated Strategic Alignment Model (ISAM) that linked IS strategy dimensions with business strategy dimensions to show how they are integrated and also showed their impact on business performance as shown in Figure 5.6 below. He found that a strategic fit between the variables within the content and process has positive impacts on the financial aspects of a company's business.

Figure 2.6 Integrated Strategic Alignment Model (ISAM)



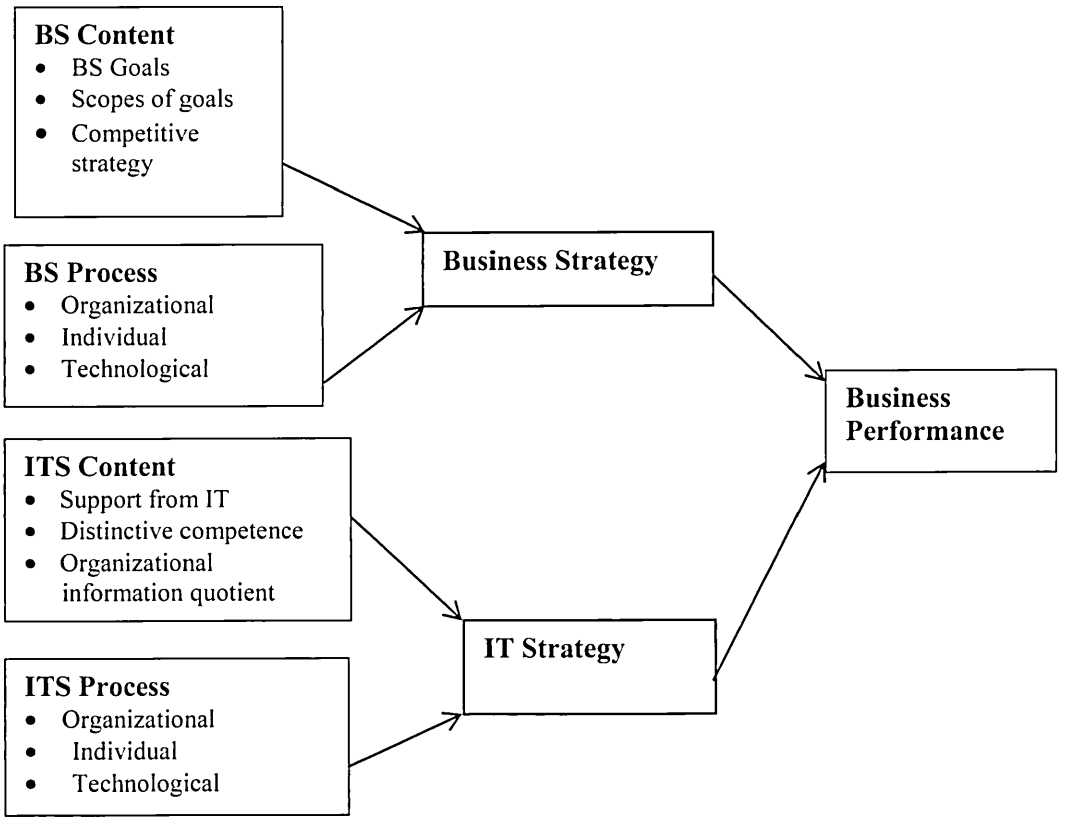
Adopted from: Shu. W. H. 2002. A Structure Model of Strategic Alignment between Information Systems and Business Strategy. Unpublished PhD Thesis. European Management School. University of Surrey. P. 138.

Figure 5.6 above shows that the effects of the alignment between the two dimensions of business strategy and IT strategy are linked to the business performance.

In conclusion, these studies proposed and developed frameworks/ models in the field of strategic information system and strategic management. They focus on IS strategy and competitive advantage by integrating the content and process dimensions of strategy. They analysed a framework/model that assists the researcher in linking IS strategy and competitive advantage by conducting research in industry. However,

having reviewed the characteristics of these models, it is necessary to develop a conceptual model that incorporates the key aspects of IT and business strategies. This model will be used also to explore the impacts on business performance, taking in account the relationship between the alignment of IT and business strategy and business performance. The first order of the conceptual model for this study is shown in Figure 5.7 below.

Figure 2.7 Research Conceptual Model



Adopted by the Author from the literature Review

The first order of the conceptual model of this research in Figure 5.7 above specifies business strategy and IT strategy concept issues along with content and process domains, the specific operationalised dimensions of the notion of IT strategy and the impact on the business performance.

5.6 Research in Information Systems and Competitive Advantage

This section reviews researches in IS and competitive advantage. It is linked between IS and competitive advantage but without a development research model to align business strategy and IT strategy. A summary of this research follows:

Sethi and King (1994) studied the development of measures to assess the extent to which an information technology application provides competitive advantage. The main purpose of their study is to provide measures and underpinning for a programme of research on IT impact assessment. This research conducted a survey and collected the data from 185 executives regarding information technology applications that had been developed to achieve competitive advantage. It analysed nine dimensions of competitive advantage provided by information technology applications. Intaher (2010) inducted research in an agile/ responsive supply chain, a strategy for competitive advantage. The objectives of this research were to explore the concept of the agile supply chain and to determine the relationship between the agile supply chain and competitive advantage. It presented a framework that linked the agile supply chain to competitive advantage. The main finding was that to survive, companies need to respond to ever-increasing levels of volatility of demand

and focus their effort upon achieving greater agility. The key to the success of an organisation is an agile supply chain strategy along with a differentiation strategy to meet the overall objective for competitive performance, hence competitive advantage. This study also finds that the agile supply chain is a strategy for competitive advantage. This research concluded by presenting different points that an organisation should implement to sustain and maintain supply chain agility. Other research by Hemmatfar et al. (2010) studied competitive advantages and strategic information systems. They discussed the concept of IS as a strategic tool by reviewing the literature of IS, competitive advantages and Porter's model for competitive advantage. They concluded that the IS strategy is an important factor in the business environment today and agreed that to achieve success in the organisation, they should establish all aspects of their planning structures based on strategic planning. Ahmadpour et al. (2011) studied strategic information systems as issues on competitive advantages. It aimed to review the literature on strategic information systems and considered the scientific idea of IS strategy. They found that one of the important factors in a new business environment is an emphasis on strategic information systems. They conclude also that the organisation must establish all aspects of their planning structures based on strategic planning if they want to achieve success.

5.7 Conclusion

Information technology is increasingly being adopted in recent times and has become a part of the business environment. Although different technologies provide

the productive knowledge basis of a business, technology itself is a competitive factor of change. The company that needs to achieve competitive advantage should understand how technology affects competition. This chapter has attempted to discuss the importance of IT and how IT affects competitive advantage. It describes the growth of IT and views how IT can affect competitive advantage by bringing evidence from the literature along with research undertaken in IT and competitive advantage in order to build this research conceptual model.

CHAPTER SIX

RESEARCH METHODOLOGY

6.1 Introduction

This chapter considers the research methodology and discusses the methods employed in the collection and analysis of data for this study. It starts by explaining the research philosophy and then the research approach before determining the different methods used in social science research in order to justify the methods chosen for this study. The design and structure of the questionnaire used is explained and then the research sample is clarified. The method by which the data was analysed is discussed and the ethical issues are taken into consideration. The evidence for the validity and reliability of this research is explained before finally concluding the chapter.

6.2 Research Philosophy

Research is a process of gathering information to investigate the reality of something. Hussey and Hussey (2009:1) stated that *"research means different things to different people"* however they pointed out that research is an essential factor and central to business and academic needs. Saunders et al. (2009:5) defined research as: *"something that people undertake in order to find out things in a systematic way, thereby increasing their knowledge about the phenomenon under study"*. However, research philosophy is important for any process of research because it is a necessary part of any research. Moreover, any research process

depends on the philosophy and the research approaches adopted in the study. As Saunders et al. (2009:101) state, "*The research philosophy you adopt contains important assumptions. These assumptions will underpin your research strategy and the methods you choose as part of that strategy. In part, the philosophy you adopt will be influenced by practical considerations. However, the main influence is likely to be your particular view of the relationship between knowledge and the process by which it is developed*". Easterby-Smith et al. (2008) discuss the issues of research philosophy and the importance of the philosophy of research giving three reasons why philosophy is significant and important to the research methodology. First, understanding the research philosophy helps researchers to provide the evidence required in answering the research questions and helps the researcher in clarifying issues regarding their research design. Second, research philosophy can help the researcher to identify the appropriate methodologies and methods to achieve their goals. Third, an understanding of research philosophy can be helpful in the selection or adoption of research methods that may be out with the previous researcher's experience.

Social science research is characterised by a number of different perspectives or philosophies (Bryman and Bell, 2007). The two main research perspectives in social science are the positivist (objectivism) and phenomenological (subjectivism) paradigms (Collis and Hussey, 2009). Within these perspectives are different types of research approaches, ranging from interpretative, discourse analytical, thematic, ethnographic, action research, participative, collaborative, descriptive, correlational,

cause-comparative, and experimental (Coolican, 2004). The major differences between the two major philosophical perspectives positivist and phenomenological are the type of data and the methods used. Thus, understanding them, their assumptions and their applications is important when undertaking any research project. The next section will provide a brief discussion of the positivist and phenomenological perspectives.

6.2.1 Positivist (Objectivism) Perspective

The Positivist perspective is a method of understanding phenomena based on scientific inquiry and objectivity. The positivists believe in empiricism and primarily claim that knowledge is only of significance if based on observations of external reality (Bryman and Bell, 2007). The positivist perspective is based on the assumption that social reality and social phenomena is independent of the researcher and exists regardless of whether or not researchers are aware of it. As a philosophy of research, positivism is based on ontological assumption of objectivism that views reality as external and objective, and on epistemological analysis that regards knowledge as only significant if based on observation of reality (Easterby-Smith et al., 2008). Therefore, the act of investigating reality does not have an effect on reality (Collis and Hussey, 2009). In this respect, the main aim of the research process is to construct a set of theoretical statements that can be generalised in the development of universal knowledge. This approach, therefore, tends towards the

use of questionnaires for data collection and statistical analysis such as hypothesis testing, random sampling, aggregation, precision and measurement (Collis and Hussey, 2009).

6.2.2 Phenomenological (Subjectivism) Perspective

This perspective is based on the assumption that knowledge of research depends on human experience, contending that the natural sciences cannot be applied to the social world because of the difference between the natural world and social world (Saunders et al., 2009). It aims to seek the opinion of the participants directly under investigation or from the actor's actions and perceptions (Collis and Hussey, 2009). Therefore, it implies that the act of investigating reality affects reality. According to Collis and Hussey (2009) phenomenology focuses on phenomena from the participant's own frame of reference. Easterby-Smith et al. (2008) discussed that the phenomenological perspective focuses on what social actors individually and collectively are thinking and feeling about the social phenomenon under research. Researchers using this paradigm are more likely to work with qualitative data, investigating small samples in depth or over time and using multiple methods to establish different views of phenomena (Collis and Hussey, 2009). Data derived in this way are arguably characterised by greater richness and allow the researcher to discover the basis for new ideas and theories.

The aim of this study is to investigate the strategic uses of IT within Libyan oil companies, find the important IT strategy variables and business strategy variables, and then to establish the relationship between them. The positivist perspective is adopted in this research because of the following reasons:

1) It is based on the belief that the methods and the practices of natural scientists can be applied to behavioural studies and theories relating to organisational change and psychological contract. This research sought to study the effect of IT on competitive advantage in the Libyan context rather than seeking a deeper understanding of the relevant issues. On this basis, adopting a more objective stance towards the research is important (Easterby-Smith et al., 2008);

2) It can provide a highly structured methodology which can facilitate replication; and

3) It depends on quantifiable observations that allow the researcher to undertake a statistical analysis based on the collection of quantifiable data. In light of these three points, the researcher asserts that a positivist paradigm is appropriate for this research study.

6.3 Quantitative and Qualitative Research Approaches

Social science research is based on two main research approaches: quantitative and qualitative. The research methods that derive from them are quantitative and qualitative respectively (Collis and Hussey, 2009). Quantitative research is based on

numerical data that can be statistically generalised while qualitative research is based on in-depth information from a limited range of sources (Hussey and Hussey, 1997). The two approaches are explained in more detail below:

6.3.1 Qualitative Research Approach

According to Collis and Hussey (2009) qualitative research gives the researcher more flexibility in exploring phenomena in their natural environment rather than being restricted to a relatively narrow way of behaviour. A qualitative approach implies that the data are in the form of words as opposed to numbers. Data is normally reduced to themes and categories and evaluated subjectively. Bryman and Bell (2007) noted that more attention is now given to qualitative research such as description and discovery because it provides more understanding of individual behaviour. Moreover, Punch (2005) states that, research design in qualitative research is very useful when little are known about a group of people or phenomena. Furthermore, many researchers have found that the best methodology in exploratory research is the qualitative approach because when the study asks questions such as what, how or why, this approach again is the most appropriate (Bryman and Bell, 2007).

6.3.2 Quantitative Research Approach

The quantitative approach is based on the positivist paradigm that all phenomena can be described through appropriate scientific analysis (Collis and Hussey, 2009). It has been the dominant approach within the research community. It is based on the belief

that social facts are there to be found and can therefore be investigated (Bryman and Bell, 2007). Quantitative research works with things that can be counted and requires statistical manipulation of numbers (Saunders et al., 2009). In addition, the quantitative approach aims to assess and analyse the relationship between different research variables (Cohen et al., 2013). Descriptive and inferential statistical tools can be used in data evaluation in this approach. The quantitative approach has been described as a method which attempts to control the background of the study as much as limiting the goals within an exclusive circle of behaviour, the use of different and objective observation of the action (Rudestam and Newton, 2007).

6.4 Triangulation Research Approach

Cohen (2013:294) defined triangulation as "*the use of two or more methods of data collection in the study of some aspects of human behaviour*". Triangulation can also be explained as the application and combination of several research methodologies in the study of the same phenomenon (Denzin and Lincoln, 1998: 318). Saunders et al. (2009) argue that using combined methods in a study is very helpful. Also, Altrichter et al. (2008) state that triangulation describes the situation in more detail and balance. Triangulation has different advantages. For example, it helps to improve research validity and reliability because the use of more than one method contributes greatly to interpretational balance as one method can be used to evaluate the validity of the other (Cohen, 2013). In other words, it gives the researcher the ability to use a combination of research methods. According to Creswell (2009)

triangulation builds on the concept of assumption which would reduce bias inherent in the data collection method and sources by using more than one method to collect data.

This study is undertaken to research the effect of IT on competitive advantage of Libyan oil companies. The research method selected is quantitative using a Likert scale questionnaire because of the following reasons: 1) this method is usually based on numerical collection and analysis using questionnaires as an instrument (Gay and Airasian, 2003). 2) It seeks to gather numerical data and uses statistical analysis. This helps to determine the extent to which there are differences between the different factors. This study collected data by the use of a questionnaire and used statistical tests to analyse data. 3) It aims to assess and analyse the relationships between certain variables (Cohen et al., 2013) relevant to this research because one of the objectives is to explore the relationship between business strategy and IT strategy. 4) The quantitative method emphasises the testing of theory by using numerical quantification in data collection and analysis (Punch, 2003) and is based on the philosophy of positivism all of which makes the quantitative approach appropriate to this study. Furthermore the quantitative method enables the researcher to survey a large sample of population within a relatively short time frame.

6.5 Designing the Questionnaire

The designer of a questionnaire must aim to meet the objectives of the study and answer the research questions (Bryman and Bell, 2007). Therefore it is crucial for the researcher to spend sufficient time in the design of the research questionnaire in deciding what data is needed and which method will be used to analyse the data (Saunders et al., 2009). Reviewing the literature in depth and discussing ideas with other researchers and the supervisor or other interested researchers are important stages in developing a research questionnaire (Bryman and Bell, 2007). Designing and developing a questionnaire should be aimed to answer the research questions and achieve the objectives of the study. The starting step in designing the questionnaire for this study was searching the literature and reviewing a number of available questionnaires that were used in previous similar research. In the first draft of the questionnaire there were some items selected on the basis of their clarity and relevance from different studies (Hussin et al., 2002 and Shu, 2002).

A Likert scale questionnaire is one of the most appropriate methods for collecting data in social science research (Oppenheim, 2005). It was used in this study because it can be easily analysed numerically appropriate to the nature of this study (Easterby-Smith el at., 2008). According to Hair et al., (2003) using a seven-point scale gives greater precision, particularly with respect to the extent of how it will use by respondents to view the items. The seven-point scale favours an improvement in a questionnaire's reliability but it may make it difficult for the participants as they

have to look at and choose between a numbers of choices on the scales. However, the scale of five- points is usually the standard and is ubiquitous in quantitative research (Grant, 2010). This research applies a five-point scale: strongly disagree, disagree, neutral, agree, and strongly agree to obtain information from the participants. The questionnaire can be found in Appendix 1. The Likert scale allows data analysis to find the suspected items which reduce the overall reliability of the questionnaire data that can be treated or measured as ordinal or nominal scale. This advantage is one of the reasons for using the SPSS in analysing data obtained through a Likert scale questionnaire.

Questionnaires can be classified into two different types: a self-completed questionnaire and an interviewer-completed questionnaire. In the first type, respondents answer and complete questionnaires by themselves. There are three ways to administrate a self-completed questionnaire: delivery and collection by hand; postal or email questionnaire; and internet-mediated questionnaire (Saunders et al., 2009). In the second type of questionnaire the researcher contacts the participants personally. It enables the researcher to explain the questions and write down individual answers (Saunders et al., 2009).

Questionnaire items can also be classified into two different types: open-ended and close-ended questions. In the first type, the researcher places upon the respondents, the responsibility for answering the questions by giving their opinions as precisely as possible in their own words. However, the problem with this type is that it might be difficult to analyse the data. In the second type, the researcher offers a set of pre-

written answers and asks the respondent to choose the answer that most closely represents their opinions. This type of answer is easier to analyse than the open-ended. However, close-ended questions force respondents to choose one answer from given predetermined alternative answers that might not have otherwise come to mind (Collis and Hussey, 2009).

In this study a self-completed questionnaire is used to collect data. This type of questionnaire was chosen because it gives the respondents time and freedom to answer the questions without any influence from the researcher. It was sent by email to the respondents in Libyan oil companies saving time and reducing costs. The questions are classified into closed-ended questions by using a Likert scale in the answer.

There are different advantages in using a questionnaire: i) it collects a large amount of information from a large number of respondents ; ii) it saves time in data collection in a relatively cost effective way; iii) the data are easy to enter, tabulate and analyse with many computer software packages; iv) most people have had some experience with this type of questionnaire so it does not make people apprehensive in general; v) the appropriate responses are easy to identify; vi) and the questionnaire is less intrusive than telephone or face to face interviews (Collis and Hussey, 2009).

However there are also some disadvantages of using a survey questionnaire. Questions are sometimes difficult to understand by respondents because they are not familiar with, or not interested in, the subject of the study. A low rate of response on unanswered questions is a common problem in the survey questionnaire. Moreover, the questionnaire does not allow participants to freely express their views in the case of close-ended questionnaires and pre-determined answers. Researchers noted that respondents try to read all the questions before they start answering them and to some extent this might affect the independence of questions and answers (Bryman and Bell, 2007).

6.5.1 The Questionnaire Structure

There are four basic principles of ordering the questions of a questionnaire. These are: sequencing the questions in descending order of importance and usefulness; grouping the questions that are similar in content or question type together; taking advantage of the cognitive ties that respondents are likely to make among the groups of questions in deciding the order of the questions involved; and placing the questions that are more likely to be difficult after questions that are likely to be easier to answer (Corey, 1990:64). Compatible with these four principles the questionnaire in this study was divided into four sections, each encompassing a different theme as follows:

Section one of the questionnaire aims to elicit the background of the participants and some personal information. The reason for starting with these questions is because they are easy to complete and do not include sensitive questions. Questions include the participant's experience, qualifications, position within the organisation, gender and age range. Bell (2005) argues that it is preferable for the questionnaire to start with the more straightforward, easy to complete questions and then move to the more complex ones.

Section two of the questionnaire was designed to elicit the business strategies used in the Libyan oil companies. It is divided into two parts. The first part of this section consists of three groups of questions. Each question represents a statement related to a strategy area which is measured on a 5 -point Likert scale, where a score of 1 means that the respondent strongly disagrees and a score of 5 represents strong agreement. The first group comprises nine questions. They are focused on the understanding of business strategy by participants. The second group comprises three questions. It aims to determine the content of the business strategy. The last group has five questions. Their objective focuses on the process of business strategy. In the second part of this section, participants are asked to choose important variables for business strategy and rank them in order of importance from 1 to 6 by using number 1 as the most important and 2 as the next most important, and so on.

Section three of the questionnaire is composed of questions designed to investigate the information systems strategies adopted by Libyan oil companies. This section is

also divided into two parts, with the first including three different groups of questions. A similar scale is adopted as in section two. The first group contains one question with 14 sub-questions designed to elicit information about IT strategies used in Libyan oil companies. The second group comprises questions about the IT support related to the business strategies. The third group focuses on the IT strategy process. In the second part in this section, respondents are asked to choose important variables for IT strategy and rank them in order of importance from 1 to 12 by using number 1 as the most important and 2 as the next most important, and so on.

Section four of the questionnaire consists of questions designed to investigate Libyan oil companies' performance evaluation and consists of two different groups. The first group contains questions asking respondents to rate their organisations relative to the industry average in terms of long term profitability, sales growth rate, finance liquidity (cash flow), operating profits before financing and taxation, return on sales and overall business performance. The second group includes questions about the organisational impacts of IT. The main objective of these questions is to complement and verify the response given to the previous question in the first group of this section which relates to the effect of IT on the performance. The questions on IT impact attempts to address the link between IT and organisational performance.

6.5.2 Translation of the Questionnaire

After developing the questionnaire and once it had been approved by the School Research Ethics Committee and accepted by the researcher's supervisor, it was translated into Arabic because the main language of the target sample in this study is Arabic. The translation process was started by translating the questionnaire from English into Arabic. Translation raises delicate issues in cross cultural methodology. Great care must be taken to avoid altering concepts and meanings (Bulmer and Warwick, 1993). The questionnaire was first translated into Arabic by the researcher then checked by an expert translator in Libya to ensure that changing the language did not affect the concept and the meaning of the questions. The Arabic questionnaire was then given to five Arabic-speaking PhD students studying in some of the UK universities to read and check the language. The feedback from the experts, researcher's supervisor and the Libyan students was taken into consideration and changes were made to improve the clarity and comprehensibility of some questions. When the Arabic was completed, it was translated into English and then checked against the original English questionnaire. The two questionnaires were similar. This confirms that the Arabic questionnaire was valid and reliable for this study.

6.5.3 Explanatory Covering letter

A formal covering letter is required to facilitate the mission of the researcher and introduce her by giving necessary information about the intended study. It was

written in English and then translated into Arabic. The explanatory letter was written on a single page. It introduced the researcher and explained the objectives and importance of the study. It encouraged the respondents to co-operate by providing accurate data and returning completed questionnaire. An effort was made to choose the clearest and most comprehensible language to define and explain the main objectives of the research to the participants in the explanatory letter that was attached to the front page of the questionnaire. The letter described the research objectives, the methods used, the time needed to complete the questionnaire, and how the findings would be used. Also it assured respondents that the findings would be used for academic research only and not for any other purpose; and that any personal information would be kept confidential with the survey being anonymous. Otherwise, the participants could drop out of the study any time. Finally, thanks to the participants and details for contacting the researcher was written at the end of the explanatory letter.

6.5.4 Pilot study

Pilot studies are described as an abridged forerunner replica of an organisational main study (Yin, 2004). The pilot study was carried out in February 2012 to pre-test the reliability and validity of the questionnaire using 6 managers and 10 PhD students. They were asked if there were any important questions that should have been included. The questions asked in the pilot study were:

- Are the instructions of the questionnaire clear?
- Can you mark any questions you think are not clear?
- Can you mark any questions you think are not easy to answer?
- Would you please add any comments or suggestions?

The purpose of the pilot study was to ensure that the questions elicited the information being required by the study, to clear up any difficulty in understanding the questions, and request the participants to give their comment and suggestions. As a result of the pilot study, some minor modifications were made such as deleting some questions from section one because the participants did not understand them. They also said that some questions were not linked to strategy. Also, as a result of the pilot study the researcher added two variables in IT strategy variables in section two of the questionnaire because they were noted by the participants. Also some wording was changed and some questions were reordered. Thus the researcher was able to confirm that the questionnaire was suitable and appropriate for the aim of the study.

6.5.5 Distribution of the Questionnaire

Questionnaires were distributed between September and December 2012.They were sent to the participants by email then the researcher called them by phone to make sure they had received the email. The researcher has family relationships with some

managers and workers in each company and these people were very helpful in distributing the questionnaires. Moreover, some of the researcher's close relatives and friends who work in oil companies also helped to distribute and collect the questionnaires. They helped during the distribution process by asking their friends working in the oil companies to distribute and collect the questionnaires. Some managers sent their questionnaires by DHL post; others used their emails to send the questionnaire while the rest were returned to the researcher's relative/friends to send them back to the researcher.

Problems were faced when distributing the questionnaire in Libyan oil companies. First, there have been changes in the management personnel of the Libyan oil companies since the revolution of 17.02.2011.They started their work by fixing the damage that happened after the revolution and therefore had little time for routine activities such as checking their emails daily. This meant that the researcher had to contact them by phone to remind them about the questionnaire. Second, the internet was not working well so that some managers did not receive the questionnaire at all. It was necessary to send the questionnaire more than once to each manager. Third, some of the managers proved unhelpful because they did not believe in doing research at a time when their companies were still not ready to restart operations. In this situation, relatives of the researcher were asked to contact these managers and urge them to complete the questionnaire by explaining its importance for this study. Finally, when it came to returning the questionnaire, the researcher phoned and sent relatives to managers to remind them to do this. Also, in the distribution of the

questionnaire period the researcher's relatives and friends faced difficulties and problems in the process of distribution such as the difficulty to get access to the respondents because of security reasons in the oil companies.

This research was conducted with all local Libyan oil companies. There are eight companies; Waha (WOC), Arabian Gulf (Agoco), Zueitina (ZOC), Sirt, Azawia Oil Refining Company (ARC), Brega Marketing Company, Jowfe Oil Technology (JOT), and Ras Lanuf Oil and Gas Processing Company (RASCO). The sample for the study involved 96 managers from top to middle management level. It included all the top managers, all IT managers, all finance managers and other managers in the middle level of these companies. The other managers in the middle level were chosen from the managers who were working in a position directly using business strategy or IT strategy or have responsibility in the decision making process related to IT strategy or business strategy such as training and developing managers, communication managers, and administrative managers. The questionnaires were sent to all managers in top level and middle level positions including senior managers in the middle level (other managers). As shown on Table 6.1 below, there were 12 questionnaires distributed to each company of the eight oil companies. These 12 questionnaires were conducted by a senior manager, an IT manager, finance managers and 9 managers from the middle management in each company. Finally 91 questionnaires were returned out of all the distributed questionnaires giving a high response rate of 94.79%.

Table 3.1 No of Questionnaires Distributed, Returned and Response Rate

Libyan Oil Companies	Distributed Questionnaires	Returned Questionnaire	Response Rate	% of Total Response
Waha Oil company	12	11	91%	12%
Arabian Gulf oil company	12	11	91%	12%
Zueitina oil company	12	11	91%	12%
Sirt Oil company	12	12	100%	13%
Azawia Oil Refining company	12	12	100%	13%
Brega Marketing Company	12	10	83%	11%
Jowfe Oil Technology	12	12	100%	13%
Ras Lanuf Oil and Gas Processing Company	12	12	100%	13%
Total	96	91	94.79%	100%

6.6 Data Analysis

Regarding this research, it used SPSS in analysing data since it is capable of performing a large number of mathematic and statistical functions and procedures and is also endowed with inherent data handling flexibility. Furthermore, it doesn't only use descriptive statistics such as frequencies and descriptive ratio statistics but also it can used to undertake bivariate statistics such as means and cross-tabulation techniques (Norusis, 2011). The following steps show how the SPSS technique was utilised in the statistical procedures of this research:

1. The researcher entered the data being collected by using SPSS statistical software then compiled all the data collected except the data in section one in the questionnaire. Thus the data was collated into a form that will later be useful for storage, ease of access and analysis.

2. In terms of research objectives of this study, first, it used frequency techniques in order to examine the research variables BS,ITS and organisational performance of the company to examine the use of these variables in Libyan oil companies in this study; second, the exploratory analysis was applied in the sum of the total score for business strategy, IT strategy and organisational performance of the companies variables to explore the importance of these variables; third, the average rank per management technique was used to understand the important business strategy, IT strategy variables in Libyan Oil Companies and analyse how these variables are used in order of importance to these companies. It attempts to determine the business strategy variables.

3. In terms of the first section in the questionnaire, the demographic data such as respondents' educational qualification; respondent's current position in the company; gender of respondents; respondents' age; years of employment in the company and years in current position was analysed by using SPSS. This technique gave the percentages of the data and was used to explain the data analysed in order to understand the context of Libyan oil companies and the features of these companies and employees.

6.7 Ethical Considerations

Researchers in recent years have paid much attention to ethical issues in social and science research (Cohen et al., 2013). Therefore, the current study was carried out in line with ethical requirements. The application form for the ethical issues was filled and submitted to the Dundee Business School Research Ethics Committee for approval. It required the researcher to complete five different sections that related to the student information, nature of the research, research methods, general ethical issues, other ethical issues linked to avoiding harm and risk to participants, and risk assessment. (see appendix 3). After the survey commenced, a considerable effort was made to choose the correct, comprehensive and most succinct language to define and explain the main objectives of the research to the participants in the explanatory letter attached to the front page of the questionnaire. It included the research objectives, the methods used, the time needed to complete the questionnaire, and how the findings would be used. Furthermore it reiterated to the respondents that the findings would be used for academic research only and not for any other purpose; that, any personal information for the participants would be kept confidential with the survey being anonymous. Otherwise, the participants could stop and drop out of the study at any time during the time of the research. Finally, it concluded by offering thanks to the participants and details for contacting the researcher.

6.8 Validity and Reliability of the Research

Questions of validity are concerned with the truth of research results and findings and instruments (Bryman and Bell, 2003). Validity also refers to the extent to which the findings of a study are generalisable or transferable (Hussey and Hussey, 1997). This research is validated by the research being conducted in all the oil companies in Libya which is an extremely high sample size and was used by most of the managers in these companies at the top and middle level. This will enhance the generalisability of the results. As Saunders el al. (2009) stated, the research instruments should be pilot tested before starting the empirical research to assess their validity. In this study the questionnaire was assessed by academics and by managers in oil companies in Libya in both languages during the pilot study because it is important to ensure that a tool used in the research such as questionnaire or interview carefully reflects the correct meaning and the research questions.

Reliability is concerned with the consistency of the research measures and findings (Bryman and Bell, 2007). Collis and Hussey (2009) stated that the findings and measurements of the research can be declared reliable if they give the same results by retesting them with the same test at a different time. However, reliability is usually tested by statistical operations, indicated by the reliability co-efficient of a Cronbach Alpha test. Field (2009) considered that the internal consistency method, based on "Cronbach Alpha Test", is statistically the best way to assess the reliability of questionnaire responses. The Cronbach Alpha test ranges between zero and one. Theoretically, the higher the co-efficient alpha is the more reliable response. Field

(2009) indicated that a value of 0.70 is a minimum acceptable value for Cronbach Alpha Test. Otherwise; there are suggestions that values below 0.70 can be also acceptable in the case of psychological research because of the diversity of the constructs being measured. The current research utilised the Cronbach Alpha Test and tested the data from the questionnaire to measure the reliability of the questionnaire responses. The results of this test showed that almost all the questions lay within the normal and accepted range and the overall alpha value for the whole sample was 0.927, confirming the reliability of the respondents' answers.

6.9 Conclusion

This chapter has focused on the research methodology adopted for this study. It outlines the research philosophy and approaches to identify the philosophy and approach that were adopted in this research. It also outlines and discusses the Likert Scale questionnaire as a research method used to collect the data. The study sample is followed then the steps involved in the data analysis explained. It also provided a discussion of ethical considerations as well as the validity and reliability of the research. The results of the study are presented in the next chapter.

CHAPTER SEVEN

DATA ANALYSIS

7.1 Introduction

One of the main aims of this research is to investigate the use of information technology strategies (ITS) and business strategies (BS) in Libyan oil companies. This chapter presents the analysis of data collected from questionnaires. First, following this introduction, the next section 7.2 presents the analysis of data on the research population and their demographic characteristics, followed by the analysis of data on the relationship between business strategies and position in section 7.3. In section 7.4, data on the relationship between information technology strategy and position is reported while in section 7.5 data on the relationship between company performance evaluation and position is presented. Section 7.6 presents the analysis of data on business strategy variables while section 7.7 presents the analysis of data on ITS variables. Section 7.8, presents the analysis of data on company performance evaluation while section 7.9 presents the analysis of data on the rank of business strategy in Libyan oil companies. Section 7.10, presents the analysis of data on the rank of ITS variables while the last section concludes the chapter.

7.2 Research Population and Demographic Data

This section demonstrated the data related to the population and demographic of the Libyan oil companies. There were selected by: educational qualifications; current

position in the company; gender; age; years of employment in the company and years in current position.

7.2.1 Respondents' Educational Qualifications

Table 7.1 below shows the data on the educational qualification of the managers in the different companies and their educational levels. In order to gauge the educational qualification of managers responsible for business strategy and IT strategy in these companies, their educational qualifications were requested. The table reveals that more than half of the respondents were educated to Bachelor degree level and over a third held a Master's degree. This demonstrates the high level of education of the managers. Clearly there is a considerable level of education among those responsible for promoting business strategy and IT strategy strategies in the industry.

Table 7.1 Educational Qualifications of Managers

Qualification	No. of Respondents	Percentage Response
Degree	53	58.2
Master	33	36.3
PhD	4	4.4
Others	1	1.1
Total	91	100.0

7.2.2 Respondents' Current Position in the Company

Table 7.2 shows the positions of managers in the companies studied. The purpose of this question was to ascertain whether the respondents were working at a level where

they were involved with IT strategy and business strategy. Looking at the table, it can be seen that the top managers, IT managers, and finance managers each accounted for 8.8% of the sampled population. Middle level managers on the company accounted for 73.6% of the respondents, including employment managers, training managers and communication managers. Overall, a total of 26.4% of the study sample fall amongst those at the helm of affairs in pursuing the competitive advantage of their respective companies in the Libyan oil industry.

Table 7.2 Current Position in the Company

Respondent's Position	No. of Respondents	Percentage Response
Top Manager	8	8.8
IT manager	8	8.8
Finance Manager	8	8.8
Other	67	73.6
Total	91	100.0

7.2.3 Respondents' Gender

Data on gender was sought so as to understand the issues of gender representation in the industry which could have bearing on the choice of IT strategy and business strategy in the industry. Table 7.3 below reveals that 82 out of the 91 respondents were male. This high rate of male respondents reflects the norm and the trend existing in Libyan oil companies.

Table 7.3 Respondents' Gender

Respondent's Gender	No. of Respondents	Percentage Response
Male	82	90.1
Female	9	9.9
Total	91	100.0

7.2.4 Respondents' Age

Table 7.4 below presents information on the ages of respondents. It shows that the dominant age group was the 50-59 years old, representing 41.8% of the sample. The second largest group were those aged between 40-49 who accounted for 30.8% of the respondents. They are followed by those aged more than 59 who accounted for 15.4%. Those aged between 30-39 made up 12.1% of the respondents. It is reasonable to conclude that this pattern supports a view that managers in these companies are likely to have had the benefit of having gained many skills during long experience

Table 7.4 Respondents' Age

Respondent's Age	No. of Respondents	Percentage Response
30-39	11	12.1
40-49	28	30.8
50-59	38	41.8
Over 59	14	15.4
Total	91	100.0

7.2.5 Number of Years in Employment with the Company

The number of years in employment reflects the length of time the managers have been associated with the company. Table 7.5 below shows the number of years the respondents have been employed in the company. It shows that over half the respondents had been with their current employer for 20 years or over. Given the high proportion of middle managers in the sample, this result attests to the respondents' experience.

Table 7.5 No. of years in the Company

Years of Services	No. of Respondents	Percentage Response
1-4	3	3.3
5-9	9	9.9
10-14	12	13.2
15-19	10	10.9
20-24	19	20.9
25-29	17	18.7
30-35	14	15.4
More than 35	7	7.7
Total	91	100.0

7.2.6 Number of Years in the Current Position

The number of years in their current position reflects the level of managerial experience the respondents have had. Table 7.6 below shows the number of years the respondents have spent in their current positions. It shows that the respondents remained in their current positions for long time spans as job rotation appears infrequent. It also reveals that two thirds of the respondents had been in their current

positions for more than five years, and a fifth for more than ten years. This finding suggests that current practices in the industry do not give staff an opportunity to gain more experience in different positions in the company

Table 7.6 No. of Years in Current Position

Years of Services	No. of Respondents	Percentage Response
1-4	30	33.0
5-9	40	43.9
10-14	15	16.5
More than 15	6	6.6
Total	91	100.0

7.2.7 Summary

In summary, this section presented data on the research population and demographic characteristics of the respondents. It can be argued that given the response rate of the target population, this study is significant and highly accepted. The study yields a lot of credibility given the line of business and educational levels of the respondents. These findings also reveal a high level of investment in human capital by these companies. However, in respect to the respondents' age and years in their current positions, the pattern presented supports the view the oil companies in Libya have an aging and possibly stagnating workforce, with a rather narrow range of experience.

7.3 Business Strategy and Position of Managers

The first objective of this research is to examine the use of business strategy in Libyan oil companies. Here an attempt is made to analyse the important business strategies' content, context and process by examining the views of managers in different positions in the company. The results for the relationship/correlation between these variables are presented in the following sections.

7.3.1 Concepts of Business Strategy

This section presents the results from the analysis on data of concepts of business strategy in terms of price reduction, quality of products, and differentiation of products, new product development, diversification of product, and efficiency of products, intensive marketing, and new market strategy- all in relation to the position of the respondents. The values of the Likert scales are represented by the following code:

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

Table 7.7 Managers' Views on Concepts of Business Strategy (%s)

Business Strategy Concepts	Top Managers					IT Managers				
	1	2	3	4	5	1	2	3	4	5
Reduce price	12.5	0	25	62.5	0	0	0	37.5	0	25
Products quality	12.5	12.5	0	37.5	37.5	12.5	0	12.5	50	25
Products differentiation	0	0	12.5	25	62.5	0	12.5	25	25	37.5
New products	0	0	0	50	50	0	0	50	25	25
Product diversification	0	0	12.5	25	62.5	0	12.5	37.5	0	50
Production efficiency	0	0	0	12.5	87.5	0	0	25	0	75
Quality service	0	0	12.5	12.5	75	0	0	0	37.5	62.5
Intensive marketing	0	0	12.5	12.5	75	0	0	37.5	12.5	50
New markets	0	0	12.5	25	62.5	0	0	37.5	25	37.5
Business Strategy Concepts	**Finance Managers**					**Other Managers**				
	1	2	3	4	5	1	2	3	4	5
Reduce price	0	0	12.5	12.5	37.5	0	0	19.4	29.9	11.9
Products quality	0	0	37.5	25	37.5	6	11.9	22.4	32.8	26.9
Products differentiation	0	0	12.5	75	12.5	1.5	3	20.9	38.8	35.8
New products	0	0	0	50	50	1.5	4.5	20.9	34.3	38.8
Product diversification	0	0	0	37.5	62.5	0	13.4	10.4	32.8	43.3
Production efficiency	0	0	12.5	25	62.5	1.5	1.5	4.5	41.8	50.7
Quality service	0	0	0	37.5	62.5	0	3	9	35.8	52.2
Intensive marketing	0	0	0	50	50	1.5	6	16.4	41.8	34.3
New markets	0	0	0	37.5	50	1.5	4.5	17.9	44.8	31.3

Looking at Table 7.7, the observation is that top managers agreed with all business strategy concepts as indicated by their responses. The most important of these business strategy responses was the 100% agreement shown by top managers on new products strategy and production efficiency strategy, which suggests their

acceptance of introduction of new products as a business strategy. However, 25% of top managers also fail to consider products quality as a business strategy. A probable explanation for this might be because these respondents do not see product quality to be directly linked to their market given the largely homogenous nature of their products. Additionally, price reduction strategy is given less percentage of agreement by top managers. The majority of IT managers agreed with the three concepts of business strategy that include: quality services with 100% agreement, product quality and production efficiency with 75% on agreement on each. Not more than two IT managers agreed with price reduction strategy. The five business strategies having a high level of agreement by finance managers are new products, product diversification, quality service, intensive marketing and new marketing as there was 100% agreement on each. About 50% of the respondents agree with price reduction strategy. When asked to indicate how other managers perceive the relevance of the concepts of business strategy as regards their organisations drive for a competitive advantage in the industry, the respondents' response indicate agreement with the concepts of business strategy.

In conclusion, all top managers agreed that production efficiency, new products (100% on each), and quality service and intensive marketing (87.5% on each) constitute the main concepts of business strategy. IT managers agreed on the three business strategy concepts of quality services (100%), product quality and production efficiency (75% on each). The highest levels of agreement amongst

Finance managers were on the five business strategies of new product, product diversification, quality service, intensive marketing and new marketing. Most of the other managers perceived the five most important business strategies to be production efficiency, quality service, product diversification, intensive marketing and new marketing. Overall, all managers regard the three business strategy concepts having a high level of agreement are production efficiency, quality service and intensive marketing. The price reduction strategy has less agreement by most of the managers. This result indicates that most of the managers did not think that price reduction strategy was not important. This finding could be explained by the fact that these companies are not tasked with the responsibility of determining the price of their products but rather depend on the pricing of products set by the National Oil Corporation (NOC).

7.3.2 Content of Business Strategy

This section presents the analysis of respondents' perceptions on the content of business strategy in terms of business strategy goals, scope and competitive strategic orientation, according to their position in the company. It seeks to understand the managers' views regarding the content of business strategy and also attempts to meet the research objective that examines the content of business strategy in Libyan oil companies.

7.3.2.1 Business Strategy Goals

This section attempts to analyse the important goals of business strategy in relation to the views of the managers on business strategy. These important goals give a clear picture of the objectives of Libyan oil companies as seen by the managers.

Table 7.8 Managers' Views on Business Strategy Goals (%)

Business Strategy Goals	Top Managers					IT Managers				
	1	2	3	4	5	1	2	3	4	5
Clearly defined so that we know what we are aiming for.	0	0	12.5	50	37.5	0	0	25	37.5	37.5
Tend to focus on the prospect of becoming a leader in the industry.	0	0	25	50	25	0	25	0	37.5	37.5
Tend to focus on the prospect of continual improvement of business performance.	0	0	50	25	25	0	0	12.5	62.5	25
Tend to focus on the prospect of enhancing our corporate image with ethical business practice.	0	0	0	12.5	87.5	0	0	12.5	37.5	37.5
Business Strategy Goals	**Finance Managers**					**Other Managers**				
	1	2	3	4	5	1	2	3	4	5
Clearly defined so that we know what we are aiming for.	12.5	0	0	37.5	50	3	9	11.9	37.5	38.5
Tend to focus on the prospect of becoming a leader in the industry.	12.5	12.5	12.5	50	12.5	1.5	3	23.9	55.2	16.4
Tend to focus on the prospect of continual improvement of business performance.	0	12.5	0	50	37.5	1.5	6	19.4	52.2	20.9
Tend to focus on the prospect of enhancing our corporate image with ethical business practice.	0	12.5	0	75	12.5	1.5	7.5	13.4	47.8	29.9

A look at Table 7.8 above reveals that a majority of the top managers agreed with or were neutral about all four business strategy goals, with the strongest and most unanimous agreement on the fourth, corporate image and ethics. All of them observed that focusing on the prospect of continual improvement of business performance was a less important business strategy goal. About 75% of the top managers indicated that their business strategy goals are to be focused on the prospect of becoming a leader in the industry. IT managers believe that focusing on the prospect of continual improvement of business performance is the most important business strategy goal while for the other three around 75% of IT managers were in agreement. About 25% of IT managers disagreed with the statement that business strategy goals were being focused on the prospect of becoming a leader in the industry. About 87.5% of the Finance managers agreed with each of the business strategy goals statements. However, only 62.5% agreed that business strategy goals focus on the prospect of their companies becoming a leader in the industry. However, a low level of disagreement from the response of the managers was observed in regards to their perceptions on business strategy goals. For example about 25% of finance managers disagreed that business strategy goals focus on the prospect of becoming a leader in the industry. Other managers opine that the business strategy goal which focuses on the prospect of enhancing their corporate image with ethical business practice constituted the most important goals. Moreover, 76% of the other managers also agreed that their business strategy goals are clearly defined so that they know what they are aiming for. Also, 73.1% of

the other managers indicated agreement that their business strategy goal was to focus on the prospect of continual improvement of business performance. Overall, the majority of managers' response indicates that they view most business strategy goals as strategically important. They believe that focusing on the prospect of continual improvement of business performance was highly important, followed by focusing on the prospect of becoming a leader in the industry then by focusing on the prospect of enhancing corporate image with ethical business practice. There were only a small percentage of managers who disagreed with any business strategy goals and some of the goals were with full percentage of agreement. These findings reflect that these goals of business strategy demonstrate the managers' opinion regarding business strategy goals in Libyan oil companies.

7.3.2.2 The Scope of BS Goals

This section presents the results from the analysis of data on the scope of business strategy goals as shown on Table 7.9 below. There are five statements of the scope of business strategy goals: diversification into other business areas, vertical integration, expanding their business operations into other countries or regions, diversify through merger and/or acquisition, and push to dominate.

Table 7.9 Managers' Views on the Scope of BS Goals (%s)

The Scope of BS Goals	Top Managers					IT Managers				
	1	2	3	4	5	1	2	3	4	5
Diversification into other business areas.	0	0	37.5	25	37.5	0	25	12.5	37.5	25
Vertical integration.	0	0	12.5	50	37.5	0	0	37.5	50	12.5
Expanding business operations into other countries or regions.	0	0	12.5	25	62.5	0	37.5	12.5	37.5	12.5
Diversify through merger and/or acquisition	0	0	37.5	37.5	25	12.5	0	25	37.5	25
Push to dominate	0	0	37.5	50	12.5	0	12.5	37.5	0	50
The Scope of BS Goals	**Finance Managers**					**Other Managers**				
	1	2	3	4	5	1	2	3	4	5
Diversification into other business areas.	0	12.5	12.5	37.5	37.5	4.5	3	20.9	44.8	26.9
Vertical integration.	0	12.5	37.5	25	25	3	6	31.3	43.3	16.4
Expanding our business operations into other countries or regions.	0	0	50	12.5	37.5	1.5	7.5	28.4	35.8	26.9
Diversify through merger and/or acquisition	0	0	25	37.5	37.5	1.5	4.5	20.9	34.3	38.8
Push to dominate	0	12.5	12.5	37.5	37.5	0	13.4	10.4	32.8	43.3

Table 7.9 shows that most top managers (7 out of 8) agreed with vertical integration and with striving to expand their business operations into other countries or regions, followed by diversification into other business areas, diversifying through merger and/or acquisition and push to dominate. However, no respondent disagreed with any of the scopes of business strategy goals. About two thirds of IT managers agreed that: diversification into other business areas, vertical integration, and diversify through merger and/or acquisition is important for their organisations. However, there are differences of opinion with some of the scope of the business strategy. For

example, up to 50% of IT managers disagreed with the statement that a business strategy scope is to strive to diversify through merger and/or acquisition. Finance managers and other managers were similar in their agreement, most of them agreed with all the scopes of business strategy goals, with the diversification into other business areas attracting most agreement.

In conclusion, all managers agreed with most of the contents of business strategy goals. Top managers recognised that all the scopes are in the high level of agreement. IT managers expressed their high agreement with: diversification into other business areas, vertical integration, and diversification through merger and/or acquisition. The majority of finance managers were of the view that diversification into other business areas, diversification through merger and/or acquisition, and the push to dominate are important. Other managers recognised diversification into other business areas, expanding their business operations into other countries or regions, and diversification through merger and/or acquisition as the most important scopes of business strategy goals. Overall, the three important scopes that were recognised by most of the managers are diversification into other business areas, expanding business operations into other countries or regions, and diversification through merger and/or acquisition. However, there is a small level of disagreement amongst all managers with most of all the scopes of business strategy goals. This result means that the majority of managers recognised the important scopes of business strategy goals in their companies.

7.3.2.3 Competitive Strategic Orientation

This section presents the results from the analysis of data on competitive strategic orientation. There are seven statements of competitive strategic orientation as stated on Table 7.10 below. This section presents the direction of competitive strategic orientation according to the views of top managers, IT managers, finance managers, and the other managers.

Table 7.10 Managers' Views on Competitive Strategic Orientation (%s)

Competitive Strategic Orientation	Top Managers					IT Managers				
	1	2	3	4	5	1	2	3	4	5
Venture supported by detailed studies and analysis.	12.5	0	50	37	0	12.5	25	12.5	25	25
Critical internal assessment for effective cost cutting and higher operational efficiency.	0	0	25	37.5	37.5	0	12.5	12.5	12.5	62.5
Excel through better quality.	0	0	25	37.5	37.5	0	12.5	12.5	50	25
Strategic alliance for synergy.	0	25	37.5	25	12.5	0	12.5	37.5	25	25
Forward-looking and long-term partnership..	0	0	37.5	50	12.5	0	12.5	12.5	50	25
Introducing new products/services a step ahead of our competitors.	0	0	37.5	37.5	25	0	25	37.5	12.5	25
Encourage innovation.	0	12.5	12.5	25	50	12.5	12.5	0	37.5	37.5

Table 7.10 Continued

Competitive Strategic Orientation	Finance Managers					Other Managers				
	1	2	3	4	5	1	2	3	4	5
Venture supported by detailed studies and analysis.	0	12.5	37.5	50	0	4.5	7.5	40.3	38.8	9
Critical internal assessment for effective cost cutting and higher operational efficiency.	0	12.5	12.5	50	25	0	6	19.4	38.8	35.8
Excel through better quality.	0	0	0	62.5	37.5	0	0	13.4	46.3	40.3
Strategic alliance for synergy.	0	12.5	25	37.5	25	4.5	3	20.9	47.8	23.9
Forward-looking and long-term partnership..	0	0	0	62.5	37.5	0	0	22.4	49.3	28.4
Introducing new products/services a step ahead of our competitors.	0	12.5	25	37.5	25	3	4.5	31.3	43.3	17.9
Encourage innovation.	0	37.5	0	25	37.5	4.5	7.5	7.5	46.3	34.3

Table 7.10 shows that the majority of top managers disagree with or are neutral about a strategic alliance for synergy and a venture supported by detailed studies and analysis as competitive strategic orientations. However, the majority of top managers consider most of the strategies of competitive orientation as significant. About 75% of top managers see critical internal assessment for effective cost cutting and higher operational efficiency, excel through better quality, and encourage innovation strategies as strategically important for orientation competition. Top managers adopted forward-looking and long-term partnership and introducing new products/services a step ahead of their competitors' strategies with the same

percentage of about 62.5% on each. Most of IT managers agreed with all the strategies of competitive orientation. About 75% of IT managers see critical internal assessment for effective cost cutting and higher operational, excelling through better quality, forward-looking and long-term partnership and encouraging innovation are important for competitive strategic orientations. Half of these managers agreed with venture supported by detailed studies and analysis and strategic alliance for synergy. Finance managers agreed with most of the competitive strategic orientation statements. While the disagreement level of finance managers is very small comparing with the agreement level. With the exception of the first, the level of agreement of other managers with the competitive strategic orientation is very high. However, the percentage of disagreement is very small and negligible compared to the percentages of agreement in some competitive strategic orientation. Overall, all the managers identified higher operational efficiency enabling them to be more competitive by differentiating their products/services by better quality; effective strategic alliances based on a forward looking and long term perspective, being undeterred by short term economic fluctuations and lastly supporting their staff to generate innovative business and/or marketing ideas as the important competitive strategic orientation.

7.3.3 The Process of Business Strategy and Position of Managers

This section presents the results from the data analysis on aspects of the business strategy process in term of organisational, individual and technological from the

point of view of the managers. It attempts to understand the thinking of managers on aspects of the business strategy process. The findings from this section meet the third objective of this study that exam the process dimension of business strategy in these companies.

7.3.3.1 Organisational Aspects of BS Process and Position of Managers

This section explains the results from the analysis of data from nine statements on organisational aspects of business strategy process. The organisational aspects shown on Table 7.11

Table 7.11 Managers' Views on Organisational Aspect of BS Process (%s)

Organizational Aspect of Business Strategy Process	Top Managers					IT Managers				
	1	2	3	4	5	1	2	3	4	5
Formal structure involving business and IT managers.	0	0	50	37.5	12.5	12.5	0	12.5	50	25
Formal process in assessing business strategy.	0	12.5	50	37.5	0	12.5	12.5	12.5	25	37.5
Formal process in evaluating business plans.	0	12.5	37.5	50	0	25	0	25	12.5	37.5
Looking for new business initiatives.	0	12.5	25	50	12.5	0	25	25	25	25
Systematic documentation.	0	12.5	0	75	12.5	12.5	0	12.5	50	25
Systematic coordination.	0	0	12.5	75	12.5	12.5	12.5	12.5	25	37.5
Strategy process compatible with distinctive business competence.	0	0	25	62.5	12.5	12.5	0	25	12.5	50
Business review support by effective IS.	12.5	0	12.5	50	25	0	12.5	0	25	62.5
Effective communication and interaction.	0	0	25	50	25	12.5	0	12.5	37.5	37.5

Table 7.11 continued

Organizational Aspect of Business Strategy Process	Finance Managers					Other Managers				
	1	2	3	4	5	1	2	3	4	5
Formal structure involving business and IT managers.	0	12.5	25	25	37.5	6	4.5	28.4	34.3	26.9
Formal process in assessing business strategy.	12.5	25	12.5	37.5	12.5	7.5	16.4	23.9	29.9	22.4
Formal process in evaluating business plans.	12.5	12.5	25	37.5	12.5	7.5	17.9	25.4	31.3	17.9
Looking for new business initiatives.	0	12.5	25	50	12.5	3	13.4	28.4	35.8	19.4
Systematic documentation.	0	12.5	12.5	62.5	12.5	7.5	6	25.4	38.8	22.4
Systematic coordination.	12.5	12.5	12.5	50	12.5	3	10.4	32.8	37.3	16.4
Strategy process compatible with distinctive business competence.	0	12.5	25	50	12.5	0	13.4	35.8	31.3	19.4
Business review support by effective IS.	0	12.5	0	25	62.5	4.5	9	10.4	40.3	35.8
Effective communication and interaction.	0	12.5	25	25	37.5	1.5	4.5	25.4	34.3	34.3

Table 7.11 shows that there is a high level of consensus on all organisational aspects among top managers except on the first three. Top managers concurred most strongly on systematic documentation and systematic coordination as organisational aspects of business strategy process. Using formal process in assessing business strategy attracted the least important level. However, there is the same percentage of disagreement among them on most of all these aspects. The majority of IT managers believe most of these aspects especially: business review support by effective IS aspect. However, the percentage of disagreement among these participants is not more than 25% on these aspects. Finance managers differ little from the first two

groups. The majority of them concurred with most of the organisational aspects of business strategy process, over 75% for business review support by effective IS. About a third of them chose systematic documentation.as an important organisational aspect. However, these respondents have contrary views with the following aspects; no more than 25% of finance managers did not choose the organisational aspects. The thinking of other managers about the organisational aspects is that business review support by effective IS, formal process in assessing business strategy, formal process in evaluating business plans, looking for new business initiatives, and systematic coordination aspects are the most important aspects of the organisational aspects of business strategy process. Overall, there is low percentage of managers that do not go along these aspects. It is 25.4% on formal process in evaluating business plans; 16.4% on looking for new business initiatives aspect; and 12.5% on other aspects of the organisational aspects of business strategy process. In summary, the oldest aspects adopted by top managers are systematic documentation and systematic coordination while the newest aspects are adopted by the same respondents are formal process in assessing business strategy and formal process in evaluating business plans. IT managers gave the highest percentage of agreement to business review support by effective IS aspect about 87.5% but also the level of disagreement with all the organisational aspects of business strategy process among them was not high. The most important aspects of the organisational aspects are seen by finance managers are business review support by effective IS, systematic documentation, and effective communication and interaction. Otherwise,

the divergence percentages among these respondents were not more than 37.5% with all these aspects. Other managers were strongly in accord with adopting the organisational aspects of business strategy process. They see business review support by effective IS formal process in assessing business strategy, formal process in evaluating business plans, looking for new business initiatives, and systematic coordination aspects as the most important aspects of the organisational aspects of business strategy process; thus, the other managers who disagreed with these views are at the lower percentage. On the whole, the opinion of all the managers about the organisational aspects is that they believe the most important aspects of the organisational aspects are business review support by effective IS, looking for new business initiatives and effective communication and interaction. The majority of the managers align with business review support by effective IS as the most important aspect of business strategy process, while a minority percentage of managers support formal process in evaluating business plans aspect.

7.3.3.2 Individual Aspect of Business Strategy

This section explains the results from the analysis of data on the individual aspects of business strategy process. The individual aspects of business strategy process as shown in Table 7.12 are continual skill development, empowerment in the decision-making process, and competent managerial skills for effective strategy implementation. This section attempts to analyse the important aspects that may help to examine the business strategy used in the Libyan oil companies.

Table 7.12 Managers' Views on Individual Aspect of BS Process (%s)

Individual Aspect of Business Strategy Process	Top Managers					IT Managers				
	1	2	3	4	5	1	2	3	4	5
Continuous skill development	0	25	12.5	50	12.5	0	12.5	37.5	37.5	12.5
Empowerment in the decision-making process.	12.5	0	25	50	12.5	0	12.5	25.5	12.5	50
Competent managerial skills for effective strategy implementations.	0	0	25	50	25	0	12.5	37.5	12.5	37.5
Individual Aspect of Business Strategy Process	**Finance Managers**					**Other Managers**				
	1	2	3	4	5	1	2	3	4	5
Continuous skill development	0	12.5	25	37.5	25	3	10.4	26.9	32.8	26.9
Empowerment in the decision-making process.	0	0	12.5	62.5	25	6	13.4	11.9	44.8	23.9
Competent managerial skills for effective strategy implementations.	0	0	12.5	50	37.5	4.5	6	13.4	49.3	26.9

Table 7.12 shows that the majority of top managers agreed with most of the individual aspects of business strategy process. More than 75% of them agreed with competent managerial skills for effective strategy implementations as the first aspect and with the same percentages of 62.5% on each of them with continuous skill development as the second aspect, and empowerment in the decision-making process in the third place. However, some of the participants did not agree with the individual aspects of business strategy process but their percentages were not more than 25%. Empowerment in the decision-making process was the most important individual aspect from the point of view of IT managers followed by continuous

skill development (50%) and competent managerial skills for effective strategy implementations (12.5%). Finance managers also believed that the individual aspects were very important. They agreed with most of the three aspects, with a high level of agreement of 87.5% on empowerment in the decision-making process and competent managerial skills for effective strategy implementations. Other managers thought that competent managerial skills for effective strategy implementations and empowerment in the decision-making process were the most important individual aspects of business strategy. However, less percentage of agreement of individual aspects was allotted to continuous skill development.

In conclusion, most of the statements on individual aspects of business strategy were agreed by all the managers. The managers believed that individual aspects of business strategy were very important. Overall, the participants thought that the most important individual aspect of business strategy process is competent managerial skills for effective strategy implementations. This finding implies that the Libyan oil companies used the capabilities of their individual to be more effective because most of the managers believe that the managerial skills are crucial in to achieving the effectiveness implementation of their strategy.

7.3.3.3 Technological Aspect of Business Strategy Process

This section demonstrates the results from data analysis on the use of technological aspects of business strategy process in Libyan oil companies.

Table 7.13 Managers' Views on Technological Aspect of BS Process (%s)

Technological Aspect of Business Strategy Process	Top Managers					IT Managers				
	1	2	3	4	5	1	2	3	4	5
IT support during the planning process.	0	0	37.5	50	12.5	12.5	12.5	12.5	37.5	25
Product/service differentiation due to IS capabilities.	0	0	25	62.5	12.5	12.5	0	25	25	37.5
Effective role of IS architecture in strategy process.	0	0	12.5	62.5	25	12.5	0	0	50	37.5
IT support during the planning process.	0	12.5	25	37.5	25	4.5	4.5	16.4	47.8	26.9
Product/service differentiation due to IS capabilities.	0	12.5	12.5	37.5	25	4.5	6	19.4	44.8	25.4
Effective role of IS architecture in strategy process.	0	0	37.5	62.5	12.5	3	7.5	17.9	38.8	32.8

Table 7.13 reveals that top managers believe that the effective role of IS architecture in strategy process is the most important of business strategy. Product/service differentiation due to IS capability aspect and IT support during the planning process aspect came in second. Nevertheless, there is not any disagreement percentage among top managers with the technological aspects. IT managers and finance managers have the same belief about the technological aspects of business strategy process. They chose the effective role of IS architecture as the most important of these aspects. There is 62.5% of each of IT and finance managers on the other aspects. Other managers also agreed with the importance of technological aspects for business strategy process. They believed that IT support during the planning process is the most important technological aspect of business strategy process while the

other managers did not share the view of disagreement with the technological aspects of business strategy process. Overall, the majority of the managers thought that effective role of IS architecture in strategy process is the most important technological aspect of business strategy process followed by IT support during the planning process. However, the disagreement percentage among all managers with the technological aspects of business strategy process is very small.

7.4 IT Strategy and Position of Managers

This section presents the results from the data analysis on IT strategy concept, content, and process from the point of view of the managers in different positions in Libyan oil companies. This is meeting the second objective of this research which examines the use of IT strategy's concept, content and process. The results are presented below.

7.4.1 Concepts of IT Strategy

The results from the analysis of data on the concepts of IT strategy are presented in this section. The concepts of IT strategy identified in seven statements according to Earl's three level strategies: the IS strategy, the IM strategy and IT strategy as shown on Table 7.14 below. The respondents were asked to indicate their view related to the following bipolar alternatives of the concepts of IT strategy. This section attempts to highlight the important concepts of IT strategy that may help to examine the use of IT strategy in the Libyan oil companies.

Table 7.14 Managers' Views on the Concepts of IT Strategy (%s)

IT Issues	Concepts of IT Strategy	Top Managers					IT Managers				
		1	2	3	4	5	1	2	3	4	5
Decision-making	Each decision about a new IT investment is treated independently.	12.5	0	25	62.5	0	0	0	25	50	25
	Decisions about IT investment are guided by a formal IT strategy.	0	12.5	37.5	37.5	12.5	0	25	0	37.5	37.5
Problem-solving	We are concerned with using IT to solve short term problems.	0	0	50	50	0	0	25	25	37.5	12.5
	We are concerned with using IT to solve medium to larger term problems.	12.5	25	37.5	25	0	12.5	25	0	50	12.5
IT matching business need	We are concerned with matching the technology to our business needs.	0	37.5	50	0	12.5	12.5	25	0	50	12.5
	We are concerned with getting the most up to data technology.	0	25	50	0	25	0	25	12.5	37.5	25
Concern with IT management	We are concerned with how to better manage our IT resources.	12.5	37.5	0	37.5	12.5	12.5	12.5	0	75	0
	Managing information technology is not as critical as managing other resources.	0	37.5	12.5	25	25	0	12.5	75	12.5	0
Business Integration	We are concerned for a greater level of integration of our systems.	0	25	25	37.5	12.5	0	12.5	37.5	50	0
	The majority of our systems are standalone applications.	0	0	50	50	0	0	12.	37.	37.	0
Centralisation	The provision of IT facilities and support is highly centralised.	0	0	62.5	25	12.5	0	12.5	12.5	75	0
	The provision of IT facilities and support is distributed through the organisation.	0	0	50	37.5	12.5	0	0	12.5	75	12.5
Benefits of IT	The primary benefits sought of IT are improved productivity and efficiency.	0	0	25	50	25	0	0	12.5	62.5	25
	Systems are justified on a wide range of benefits including the attainment of competitive advantage.	0	0	37.5	50	12.5	0	25	25	50	0

Table 7.14 continued

IT Issues	Concepts of IT Strategy	Top Managers					IT Managers				
		1	2	3	4	5	1	2	3	4	5
Decision-making	Each decision about a new IT investment is treated independently.	0	25	25	50	0	7.5	11.9	28.4	35.8	16.4
	Decisions about IT investment are guided by a formal IT strategy.	0	0	50	37.5	12.5	3	9	19.4	53.7	14.9
Problem-solving	We are concerned with using IT to solve short term problems.	12.5	50	25	12.5	0	6	31.3	29.9	22.4	10.4
	We are concerned with using IT to solve medium to larger term problems.	12.5	37.5	37.5	12.5	0	6	23.9	29.9	34.3	6
IT matching business need	We are concerned with matching the technology to our business needs.	0	37.5	12.5	50	0	11.9	29.9	13.4	34.3	10.4
	We are concerned with getting the most up to data technology.	0	25	12.5	62.5	0	6	20.9	20.9	37.3	14.9
Concern with IT management	We are concerned with how to better manage our IT resources.	12.5	25	0	62.5	0	6	20.9	20.9	37.3	14.9
	Managing information technology is not as critical as managing other resources.	0	12.5	25	62.5	0	9	25.4	20.9	34.3	10.4
Business Integration	We are concerned for a greater level of integration of our systems.	0	0	25	62.5	12.5	4.5	10.4	26.9	43.3	14.9
	The majority of our systems are standalone applications.	0	25	0	62.5	12.5	0	16.4	35.8	35.8	11.9
Centralisation	The provision of IT facilities and support is highly centralised.	0	25	12.5	50	12.5	3	19.4	26.9	34.3	16.4
	The provision of IT facilities and support is distributed through the organisation.	0	25	12.5	50	12.5	4.5	10.4	31.3	37.3	16.4
Benefits of IT	The primary benefits sought of IT are improved productivity and efficiency.	0	0	12.5	50	37.5	1.5	3	11.9	43.3	40
	Systems are justified on a wide range of benefits including the attainment of competitive advantage.	0	12.5	0	75	12.5	3	6	29.9	44.8	16.4

Table 7.14 shows that the majority of managers agreed with most of the concepts of IT strategy. Top managers thought that each decision about a new IT investment should be treated independently. They concurred with using IT to solve short-term problems. A quarter of the participants agreed on getting the most up-to-date technology while a quarter disagreed. However, the majority of these participants stated that managing information technology is not as critical as managing other resources. They responded in the same way on getting greater integration of IT systems and that most of their systems are stand-alone applications. Half of the participants reported that the provision of IT facilities and support is distributed through the organisation. Most of the top managers (75%) agreed that the primary benefits of IT are improved productivity and efficiency. However, the level of disagreement with most of the concepts of IT strategy is very low or even non-existent. The majority of IT managers on IT believed investment decision-making is very important in the concept of IT strategy. They concur with both statements with the same percentages of 75% on each. Most of these participants agreed more with using IT to solve medium to long term problems than with using IT to solve sort term problems. IT managers have the same ideas about matching the technology to their business needs and about getting the most u- to-date technology. IT managers preferred the statement about how to better manage IT resources than that which stated managing information technology is not as critical as managing other resources.

More than 50% of IT managers agreed on the issue of a greater level of integration in their systems. They reported that the provision of IT facilities and support is distributed throughout the organisation. A majority also agreed that the primary benefits of IT are improved productivity and efficiency. Nevertheless, only a small percentage of these managers' responses disagreed with this statement. All the concepts of IT have the same percentage of agreement in each bipolar alternative of these concepts by the finance managers except the third concept that related to IT matching business needs. There is 62.5% of agreement among these participants with the third concept, related to the concern with getting the most up-to-date technology while half of them agreed on matching the technology to their business needs. For other managers the statement about primary benefits bringing improved productivity and efficiency attracted 83.3% of agreement while using systems that justified a wide range of benefits including the attainment of competitive advantage in benefits of the IT issue and the decision of IT investment being treated independently in decision making issue attracted just 60.2 % of agreement. Just over 50% of these participants agreed that decisions about IT investment are guided by a formal IT strategy in their companies and with the need for a greater level of integration of their systems. Just less than 50% of participants reported that the majority of their systems are standalone applications. However, the majority of other managers did not share the idea of disagreement with most of the concepts of IT.

The seven IT concept statements accepted by all the managers are: treating the

decisions about IT investment independently; using IT to solve medium to long term problems; getting the most up-to-date technology; how to better manage their IT resources; achieving a greater level of integration in their systems; distributing the provision of IT facilities and support throughout the organisation and improved productivity and efficiency as the primary benefits of IT. These findings suggest that these companies are more medium to long term-oriented problem solving, and perceived that their decisions about IT investment more independently. Their IT does not match the business need by achieving the most up-to-date technology, achieve a higher degree of system integration, they are more decentralised, they are also more concerned with IT management, and IT benefits on a primary basis. These characteristics are reflective of the maturity of IT utilisation in these companies, which therefore, allows them to achieve a higher level of IT alignment. It is also observed that IT support is more decentralised and most of IS literature suggested that decentralisation of IS support is better than centralised support especially in the large companies. In this research Libyan oil companies are large companies and decentralisation support of IT allows better control and provides more cohesion in their IT system.

7.4.2 Content of IT Strategy

This section presents the results from the data analysis of responses to statements on the content of IT strategy including support and advantages offered by ISS, distinctive competence of IT and organisational information quotient. This section

attempts to meet the research objective that examines the content of IT strategy in Libyan oil companies.

7.4.2.1 Support and Advantages Offered by ISS

This section presents the results from the data analysis on the support and advantages offered by ISS providing business strategy as one of the contents of IT strategy. The support and advantages offered by ISS to the nine business strategies are shown on Table 7.15 below. These results may assist in finding how IT can support business strategy and the extent to which IT strategy and business strategy are integrated.

Table 7.15 Managers' Views on Support and Advantages Offered by IT(%s)

Support and Advantages Offered by IT	Top Managers					IT Managers				
	1	2	3	4	5	1	2	3	4	5
IT support for pricing reduction.	0	0	12.5	75	12.5	0	12.5	12.5	37.5	37.5
IT support for product differentiation.	0	0	12.5	62.5	25	0	25	0	25	50
IT support for quality products.	0	0	12.5	50	37.5	0	25	25	50	0
IT support for new products.	0	0	37.5	37.5	25	0	12.5	37.5	37.5	12.5
IT support for production efficiency.	0	0	0	50	50	0	25	12.5	50	12.5
IT support for product diversification.	0	0	25	50	25	0	25	25	50	0
IT support for quality services.	0	0	25	37.5	37.5	0	12.5	25	50	12.5
IT support for intensive marketing.	0	0	37.5	25	37.5	0	12.5	50	25	12.5
IT support for new markets.	0	0	37.5	50	12.5	0	25	50	12.5	12.5

Table 7.15 continued

Support and Advantages Offered by IT	Finance Managers					Other Managers				
	1	2	3	4	5	1	2	3	4	5
IT support for pricing reduction.	0	12.5	0	37.5	50	4.5	3	17.9	44.8	29.9
IT support for product differentiation.	0	12.5	0	62.5	25	6	6	25.4	32.8	29.9
IT support for quality products.	0	12.5	0	50	37.5	6	3	17.9	43.3	29.9
IT support for new products.	0	12.5	0	75	12.5	7.5	4.5	34.3	32.8	20.9
IT support for production efficiency.	0	12.5	12.5	50	25	4.5	1.5	14.9	47.8	31.3
IT support for product diversification.	0	12.5	0	75	12.5	4.5	0	34.3	41.8	19.4
IT support for quality services.	0	12.5	0	50	37.5	4.5	3	17.9	38.8	35.8
IT support for intensive marketing.	0	12.5	0	75	12.5	6	3	28.4	35.8	26.9
IT support for new markets.	0	12.5	0	87.5	0	4.5	6	26.9	47.8	14.9

Table 7.15 demonstrates that there is no disagreement among top managers on the support and advantages offered by ISS. Nearly all top managers considered that production efficiency pricing/cost reductions, product differentiation and quality product benefitted from IT support. However, IS support for new products, promotional activities and identification of new markets were less enthusiastically endorsed. This perception could be explained by the lack of focus given to these areas as far as IT deployment is concerned. Most IT managers believed that the four areas receiving support from the existing IT facilities are pricing/cost reduction, product differentiation (75% each) where are the other 2 areas. Only half of these

managers were prepared to acknowledge IS support for quality products, new products and product diversification.

Intensive marketing and new marketing were seen as receiving the least support from the existing IT facilities. Finance managers thought that all areas received support from the existing IT facilities except production efficiency since it has lower percentage of agreement among finance managers than the other IT strategy. However, production efficiency is seen as receiving the least support from the existing IT facilities line 1 does not include production efficiency as the least anomaly. The four areas receiving support from the existing IT facilities as seen by other managers are product efficiency 79.1%, pricing/cost reduction 74.7%, quality services 74.7% and quality products 73.2% while new products and product diversification are seen as receiving the least support from the existing IT facilities. Overall, all managers believe that the three areas receiving support from the existing IT facilities are pricing/cost reduction, product differentiation and production efficiency. These findings reveal that managers concur that IT supports business strategy in these companies. It means that there is integration between IT and business strategy because of the support that is offered by IT in these companies. Also this finding implies that all managers perceived that their existing IT infrastructure contributes to the important business strategies. However, finance managers have a different view on the areas in that they see themselves as least dependent on IT support compared to top managers and IT managers. This result

could be explained by the lack of focus given to these areas as far as IT deployment is concerned.

7.4.2.2 Distinctive Competence of IT

This section presents the results from the analysis of data from statements on the distinctive competence of IT. There are six statements of the distinctive competence of IT shown in Table 7.16 below.

Table 7.16 Managers' Views on Distinctive Competence of IT (%s)

Distinctive Competence of IT	Top Managers					IT Managers				
	1	2	3	4	5	1	2	3	4	5
Linking IS capabilities to strategic goals.	0	0	50	50	0	0	25	25	37.5	12.5
Provision of IS according to needs.	12.5	12.5	50	25	0	0	12.5	25	50	12.5
Provision of crucial information for new business initiatives.	12.5	0	62.5	25	0	0	25	25	37.5	12.5
Support and strengthen business initiatives.	0	12.5	25	62.5	0	0	12.5	12.5	62.5	12.5
Enable formulation of new business strategies.	12.5	25	0	50	12.5	0	12.5	0	75	12.5
Compatible with the scope of the business.	12.5	25	12.5	50	0	0	25	25	25	25

Table 7.16 continued

Distinctive Competence of IT	Finance Managers					Other Managers				
	1	2	3	4	5	1	2	3	4	5
Linking IS capabilities to strategic goals.	0	12.5	12.5	62.5	12.5	4.5	11.9	20.9	46.3	16.4
Provision of IS according to needs.	0	0	0	75	25	4.5	17.5	22.4	38.8	16.4
Provision of crucial information for new business initiatives.	0	0	50	50	0	4.5	19.4	23.9	38.8	13.4
Support and strengthen business initiatives.	0	0	12.5	87.5	0	4.5	9	22.4	47.8	16.4
Enable formulation of new business strategies.	0	0	25	75	0	4.5	7.5	23.9	47.8	16.4
Compatible with the scope of the business.	0	37.5	12.5	50	0	4.5	16.4	29.9	28.4	20.9

Table 7.16 shows that most of distinctive competences of IT attracted high levels of agreement from most of the managers. Top managers thought that the strategic intent of IT is to support and strengthen business initiatives as the first distinctive competence of IT followed by the information systems used in these companies to enable the formulation of new business strategies. The distinctive competence of IT linking IS capabilities to the strategic goals and compatible with the scope of the business is placed in the third position by top managers. However, the other two distinctive competences are seen as less important by these participants. Around

three quarters of IT managers believed that IT used in these companies enables the formulation of new business strategies, and the same proportion believed that the strategic intent of their IT is to support and strengthen business initiatives, while more than half agreed with the provision of IS according to needs. However, the other distinctive competences of IT are seen as less important in their level of agreement.

Finance managers strongly concur with most of the distinctive competence of IT. Some of the distinctive competence of IT gained 100% agreement from these participants. Over a third of the participants believed that IT used in these companies is incompatible with the scope of the business. The four distinctive competence statements which gain the strongest agreement amongst other managers are: the strategic intent of IT is to support and strength business initiatives and the information systems used in these companies enables the formulation of new business strategies (64.2% on each); linking IS capabilities to strategic goals, and on the provision of crucial information for new business initiatives. For all managers, the two distinctive competence statements that that were seen as the most significant are: the strategic intent of IT to support and strength business initiatives and the information systems used in these company enable the formulation of new business strategies.

7.4.2.3 Organisational Information Quotient

Table 7.17 below presents the results from the analysis of data on section organisational information quotient. The organisational information quotient was given in six statements as follows: internal development involving both business and IT personnel; ability to utilise leading edge technology; ability to design a scalable platform; knowledge integration between business and IT personnel; ability to design and use IS according to business strategy; and awareness of systems security and procedures. This section attempts to present the important organisational information quotient and how Libyan oil companies designed their information systems. This may help to understand the IT strategies used in these companies.

Table 7.17 Managers' Views on Organisational Information Quotient (%s)

Organisational Information Quotient	Top Managers					IT Managers				
	1	2	3	4	5	1	2	3	4	5
Internal development involving both business and IT personnel.	0	0	12.5	62.5	25	0	12.5	0	62.5	25
Ability to utilise leading edge technology.	0	0	37.5	37.5	25	0	12.5	25	37.5	25
Ability to design scalable platform.	0	0	0	75	25	12.5	0	0	37.5	50
Knowledge integration between business and IT personnel.	0	0	25	62.5	12.5	0	12.5	25	37.5	25
Ability to design and use IS according to business strategy.	0	0	12.5	75	12.5	0	12.5	25	25	37.5
Awareness of systems security and procedures.	0	0	12.5	75	12.5	0	0	25	37.5	37.5
Organisational Information Quotient	**Finance Managers**					**Other Managers**				
	1	2	3	4	5	1	2	3	4	5
Internal development involving both business and IT personnel.	0	25	12.5	62.5	0	1.5	7.5	17.9	53.7	19.4
Ability to utilise leading edge technology.	0	12.5	12.5	37.5	37.5	3	7.5	11.9	35.8	41.8
Ability to design scalable platform.	12.5	12.5	25	37.5	12.5	1.5	4.5	20.9	47.8	25.4
Knowledge integration between business and IT personnel.	0	12.5	12.5	75	0	4.5	7.5	28.4	40.3	19.4
Ability to design and use IS according to business strategy.	0	0	12.5	87.5	0	0	4.5	14.9	61.2	19.4
Awareness of systems security and procedures.	0	12.5	25	62.5	0	0	6	20.9	49.3	23.9

Table 7.17 shows that top managers strongly believed that the effective business operations are the ability to design scalable platform. The majority of these managers are in agreement with internal development involving both business and IT personnel; ability to design and use IS according to business strategy, and awareness of systems security and procedures. There is no disagreement among top managers with any of these statements. The IT managers show a high level of agreement on the internal development involving business and IT personnel, the ability to design a scalable platform and awareness of systems security and procedure. Disagreement among the participants never rises above 12.5%. Finance managers agreed most with the ability to design and the use of IS according to business strategy followed by ability to utilise leading edge technology and knowledge integration between business and IT personnel. Their disagreements with these organisational information quotients are very small. Other managers were of the same opinion with finance managers. They believed that the ability to design and use IS according to business strategy is of first importance in the organisational information quotient. But they thought the internal development involving both business and IT personnel and ability to design scalable platform are second in order of importance while the percentages of disagreement among other managers with the organisational information quotient is of minimal substance. In conclusion, most of the participants gave organisational information quotients high levels of agreement. The important organisational information quotients are seen by all the managers as

the ability to design scalable platforms and the ability to design and use IS according to business strategy.

7.4.3 Process of IT Strategy

The section below presents the results from the analysis of data on the process of IT in relation to organisational, individual, and technological aspects. It shows the important aspects of IT strategy. It meets the objective of this research that examines the process dimension of IT strategy in Libyan oil companies.

7.4.3.1 Organisational Aspects of IT Strategy Process

The results from the analysis of data of statements on organisational aspects of ITS process are explained in this section. There are five statements of organisational aspects of IT strategy process. These statements as shown on Table 7.18 below, are formal structure involving IT and business managers, formal planning process to assess IS strategy, formal process to evaluate IS plans., systematic documentation, comparison of the strengths and weaknesses of the available strategic options in the IS planning process.

Table 7.18 Managers' Views on Organisational Aspects of ITS Process (%s)

Organisational Aspects of IT Strategy Process	Top Managers					IT Managers				
	1	2	3	4	5	1	2	3	4	5
Formal structure involving IT and business managers.	0	12.5	37.5	37.5	12.5	0	0	12.5	50	37.5
Formal planning process to assess IS strategy.	0	37.5	12.5	37.5	12.5	0	0	25	50	25
Formal process to evaluate IS plans.	0	12.5	25	50	12.5	0	0	25	62.5	12.5
Systematic documentation.	0	0	50	37.5	12.5	0	0	50	25	25
Compare the strength and weakness of the available strategic options in IS planning process.	0	0	50	50	0	0	0	50	37.5	12.5
Organisational Aspects of IT Strategy Process	**Finance Managers**					**Other managers**				
	1	2	3	4	5	1	2	3	4	5
Formal structure involving IT and business managers.	0	12.5	25	37.5	25	0	13.4	29.9	43.3	13.4
Formal planning process to assess IS strategy.	0	12.5	37.5	37.5	12.5	0	14.9	31.3	41.8	11.9
Formal process to evaluate IS plans.	0	25	37.5	25	12.5	0	14.9	29.9	44.8	10.4
Systematic documentation.	0	12.5	37.5	50	0	0	9	46.3	31.3	13.4
Compare the strength and weakness of the available strategic options in IS planning process.	0	25	25	50	0	0	16.4	38.8	37.3	7.5

Table 7.18 above demonstrates that most of the participants agreed with the organisational aspects of IT strategy statements. Particularly, IT managers disagreed with none of them. More than 50% of the top managers agreed with having a formal planning process to assess IS strategy while 50% of them agreed with each of the

other organisational aspects. Using a formal structure involving IT and business managers were the most agreed upon. Using a formal planning process to assess IS strategy and using a formal process to evaluate IS planning were agreed by about 75% of the participants. Finance managers were with IT managers on these aspects. Other aspects were agreed by about 50% of the participants with the expectation of using formal process to evaluate IS plans aspect were agreed by about 37.5%. Other managers held views on organisational aspects upon which there was almost total agreement. Using formal structure involving IT and business managers is seen as the most important aspect followed by using formal planning process to assess IS strategy and using formal process to evaluate IS planning then using formal planning process to assess IS strategy. The results from this section reveal that the participants agreed on most of the organisational aspects. It seems that using formal structure involving IT and business managers aspect is the most important followed by using the formal planning process to assess IS strategy, and then using formal process to evaluate IS planning.

7.4.3.2 Individual Aspects of IT Strategy Process

Table 7.19 below shows the results from the analysis of data on Individual aspects of IT strategy process. Two statements on individual aspects of IT strategy were included in the questionnaire: competent IS managerial skills for effective strategy implementations; and on empowerment in the decision-making process.

Table 7.19Managers' Views on Individual Aspects of ITS Process (%s)

Individual Aspects of IT Strategy Process	Top Managers					IT Managers				
	1	2	3	4	5	1	2	3	4	5
Competent IS managerial skills for effective strategy implementations.	0	12.5	25	37.5	25	0	12.5	12.5	50	25
Empowerment in the decision-making process.	12.5	12.5	25	37.5	12.5	0	25	37.5	12.5	25
Individual Aspects of IT Strategy Process	**Finance Managers**					**Other Managers**				
	1	2	3	4	5	1	2	3	4	5
Competent IS managerial skills for effective strategy implementations.	0	12.5	50	25	12.5	1.5	9	17.9	47.8	23.9
Empowerment in the decision-making process.	0	12.5	25	37.5	25	1.5	9	38.8	29.9	20.9

From Table 7.19, it can be seen that top managers agreed more on using competent IS managerial skills for effective strategy implementations than on using empowerment in the decision-making process with not more than 25% disagreeing with these aspects. The same pattern can be observed with IT managers who are little different from top managers. The finance managers, however, behaved completely differently. Their higher agreement was with using empowerment in the decision-making process. Other managers responded the same as top managers and IT managers. In summary, using empowerment in the decision-making process has a higher disagreement percentage than using competent IS managerial skills for effective strategy implementations by most of the participants. However, top managers, IT managers, and other managers believed that using competent IS managerial skills for effective strategy implementations is the most important of

individual aspects of IT strategy process in their agreement level while finance managers see using empowerment in the decision-making process as the most important aspect of IT strategy.

7.4.3.3 Technological Aspects of IT Strategy Process

This section presents the results from the analysis of data on technological aspects of ITS process. It attempts to understand the important technological aspects of ITS process. There are two technological aspects: aiming for product/service differentiation due to IS capability and the integrative role of IS architecture in strategy process. The responses of the participants about these aspects are presented in Table 7.20 below.

Table 7.20 Managers' Views on Technological Aspects of ITS Process (%s)

Technological Aspects of IT Strategy Process	Top Managers					IT Managers				
	1	2	3	4	5	1	2	3	4	5
Aiming for product/service differentiation due to IS capabilities.	0	0	50	50	0	0	25	37.5	25	12.5
Integrative role of IS architecture in strategy process.	0	0	25	75	0	0	12.5	12.5	62.5	12.5
Technological Aspects of IT Strategy Process	**Finance Managers**					**Other Managers**				
	1	2	3	4	5	1	2	3	4	5
Aiming for product/service differentiation due to IS capabilities.	0	12.5	37.5	37.5	12.5	1.5	14.9	23.9	44.8	14.9
Integrative role of IS architecture in strategy process.	0	12.5	50	37.5	0	0	10.4	22.4	56.7	10.4

Table 7.20 shows that most of the top managers agreed with the technological aspects of IT strategy process. They accept the integrative role of IS architecture in strategy of the technological aspects of IT strategy process to a greater degree than aiming for product/service differentiation due to IS capability aspects. However, there is no disagreement with any of the technological aspects of IT strategy process. IT managers share the views of top managers on using integrative role of IS architecture in strategy process of IT strategy process, more than 75% of IT managers agreed with this aspect. They agreed with aiming for product/service differentiation due to IS capability aspect as the second aspect of IT strategy process while not more than 25% of IT managers disagree with these aspects. Finance managers have different opinions, showing more agreement on aiming for product/service differentiation due to IS capability aspects than on using integrative role of IS architecture in strategy of the technological aspects of IT strategy process. However, the disagreement level among these participants with the technological aspects is not more than 12.5%. Other managers agreed with top managers and IT managers about technological aspects of IT strategy process. More than 66% agreed with using an integrative role of IS architecture in the strategy process aspect and more than half (59.5%) of them agreed with aiming for product/service differentiation due to IS capability aspect. Overall, most of the participants believed that using integrative role of IS architecture in the strategy process aspect is important than aiming for product/service differentiation due to IS capability aspect.

7.5 Company Performance Evaluation and Position

This section presents the results from the analysis of data on statements on the performance of the company. This section attempts to understand the organisational issues related to the performance variables. The performance measurement is used in this research to measure the perceived success of the organisation. In measuring the performance of the company the questions were adopted from previous studies that combined finance and non-financial measures to collect more suitable short-term and long-term data about the performance of Libyan oil companies. Performance is used as a dependent variable in this research to find the link between this variable and IT and hence the link between IT and competitive advantage. In previous research the finance measure was correlated with a non-finance measure and it was found that there was a fairly strong correlation between them. Based on the organisational performance measures, the impact of IT on business performance was conducted attempting to explore the impact of IT on organisational performance.

7.5.1 Performance Indicators and Position

This part presents the results from the analysis of data on the performance indicators. It attempts to meet the research objective of exploring the relationship between the organisational issues related to performance variables and position of managers. The indicators used in this research are long-term profitability, sales growth rate, finance liquidity (cash flow), operating profits before financing and taxation, and return on sales. The participants were asked to choose the appropriate number on the scale of

1 to 5 to show the extent to which they agreed with each of these indicators. They were asked to give their opinion about the performance of their companies with regard to these five indicators as shown on Table 7.21 below relative to their industry's average or to comparable organisations.

Table 7.21 Managers' Views on Performance Indicators (%s)

Performance Indicators	Top Managers					IT Managers				
	1	2	3	4	5	1	2	3	4	5
Long-term profitability	0	12.5	37.5	37.5	12.5	0	12.5	25	50	12.5
Sales growth rate	0	0	0	87.5	12.5	0	12.5	50	25	12.5
Finance liquidity(cash flow)	0	0	0	100	0	0	12.5	12.5	75	0
Operating profits before financing and taxation	0	0	50	50	0	0	0	25	75	0
Return on sales	0	0	50	50	0	0	0	25	75	0
Over all business performance.	0	0	37.5	62.5	0	0	12.5	25	50	12.5
Performance Indicators	**Finance Managers**					**Other Managers**				
	1	2	3	4	5	1	2	3	4	5
Long-term profitability	0	0	25	62.5	12.5	0	3	19.4	58.2	19.4
Sales growth rate	0	25	37.5	25	12.5	0	6	29.9	47.8	16.4
Finance liquidity(cash flow)	0	12.5	12.5	62.5	12.5	0	1.5	23.9	59.7	14.9
Operating profits before financing and taxation	0	0	50	37.5	12.5	0	1.5	32.8	49.3	16.4
Return on sales	12.5	0	25	62.5	0	0	3	29.9	47.8	19.4
Over all business performance.	0	12.5	25	50	12.5	1.5	4.5	29.9	49.3	14.9

Table 7.21 demonstrates that the best indicators of the performance of the company, according to the top managers are long-term profitability, finance liquidity (cash flow), and overall business performance. These participants agreed 100% on each of the first two, with two thirds of them agreeing with using overall business

performance indicators in evaluating the performance of their company. IT managers rated finance liquidity (cash flow), operating profits before financing and taxation, and return on sales the highest scores. On operating profits before financing and taxation indicator and returns on sales no IT managers disagreed. About 75% of finance managers concurred with the statements on long-term profitability and finance liquidity (cash flow) in the evaluation process of the company's performance. Return on sales came second so far as finance managers are concerned while their level of disagreement was very small on most of the performance indicators. Other managers showed a similar pattern of agreement to finance managers. Only about 6 percentage of the participants disagreed with the statements on performance indicators. In overall the important performance indicators as seen by all the managers are finance liquidity (cash flow) and return on sales indicator. This suggests that they use finance indicators to measure their performance.

7.5.2 Impacts of IT on the Performance of the Company and Position

This section presents the results from the analysis of data on the impacts of IT on organisational performance in the Libyan oil companies. There are three levels of organisational performance; time savings and reduction of administration costs at the operational level, decision making and internal integration at the management control level and the image and competitive advantage at the strategic level, as shown on Table 7.22 below. In an attempt to understand how IT affects the level of

organisational performance, the participants were asked questions related to IT impacts over the last three years.

Table 7.22 Managers' Views on the Impacts of IT on the Performance (%s)

Levels	IT Impacts on Company's Performance	Top Managers					IT Managers				
		1	2	3	4	5	1	2	3	4	5
Operational	Reduced the administration cost.	12.5	0	0	37.5	50	0	25	12.5	37.5	25
	Time saving/speeding up our tasks.	0	0	0	37.5	62.5	0	12.5	0	50	37.5
Management Control	Achieve better internal integration.	12.5	0	0	50	37.5	0	0	0	87.5	12.5
	Improved the quality of decisions.	12.5	0	0	37.5	50	0	25	12.5	50	12.5
Strategic	Improved its image.	12.5	0	0	37.5	50	0	0	37.5	25	37.5
	Better compete with our competitors.	12.5	0	12.5	25	50	0	25	12.5	37.5	25
Levels	**IT Impacts on Company's Performance**	**Finance Managers**					**Other Managers**				
		1	2	3	4	5	1	2	3	4	5
Operational	Reduced the administration cost.	0	25	12.5	50	12.5	3	9	14.9	52.2	20.9
	Time saving/speeding up our tasks.	0	0	0	37.5	62.5	1.5	1.5	1.5	50.7	44.8
Management Control	Achieve better internal integration.	0	0	12.5	50	37.5	1.5	0	9	47.8	41.8
	Improved the quality of decisions.	0	0	12.5	62.5	25	1.5	4.5	9	55.2	29.9
Strategic	Improved its image.	0	0	37.5	25	37.5	1.5	1.5	9	37.3	50.7
	Better compete with our competitors.	0	0	0	62.5	37.5	1.5	4.5	14.9	40.3	38.8

Table 7.22 shows that top managers saw IT having the most impact on the operational level of their companies. There was 100% agreement among top managers on the impact of IT on time saving/speeding up out tasks and 87.5% agreement on the impact of IT on reducing the administration costs. The impact of IT on the management control level attracted only slightly less agreement are about 78.5% of top managers agreed that IT had an impact on achieving better internal integration and the same percentage on improving the quality of decisions. The impact of IT on the strategic level according to top managers is also uncontroversial because 87.5% of them believed that IT improved image and 75% of them believed that IT helped competitiveness. Moreover the level of disagreement among these participants is small as only 12.5% disagreed with the statements. IT managers thought that IT had the most impact on the management control level. On achieving better internal integration, 100% of these participants agreed IT affects management control and 62.5% of them agreed IT had an impact on improving the quality of decisions at the management control level. At the operational level, IT managers believe that IT affects time saving/speeding up their tasks more than reducing the administration cost. Finance managers thought operational level and strategic level were most affected by IT as all of them agreed that IT affects time saving/speeding up their tasks in operational level and the same percentage agreed IT affects strategic level and helps competitiveness. More than 60% of the finance managers thought that IT affects reducing administration cost at the operational level and the proportion was the same for improving the quality of decisions at the strategic level.

However, 25% of finance managers disagreed with the impact of IT at the operational level although at the strategic level no disagreement was recorded. Thus the strategic level was perceived as subject to the highest impact of IT followed by operational level then the management control level. Other managers' responses followed the same pattern as top managers. Disagreement among other managers of the impact of IT on the three levels of organisational performance is no higher than 11%. In summary, most of the participants thought that the highest impact of IT was at the operational level, followed by the management control and then at the strategic level. This result implies that the operational level of organisational performance is affected by IT more than the other two levels. This may be because Libyan oil companies use different kind of IT systems in the operational level.

7.6 Exploring Business Strategy Variables

This section presents the sum of total scores for business strategy concepts, content and the process to understand the distribution of business strategy dominations concepts, content and process. It attempts to explore the importance of business strategy use in Libyan oil companies. The results on Table 7.23 show the summary statistics of the total score for business strategy dimensions. The total score in the first row of all the concepts of business strategy comes from adding the Likert scores (1 = strongly disagree to 5 = strongly agree) for each of the nine questions related to business strategy concept. A total score of 9 comes from strong disagreement on all nine questions, 18 corresponds to disagreement on all questions, 27 for neutrality, 36

for agreement and 45 for strong agreement. The total score in the other rows on Table 7.23 derives from applying the same technique, adjusting for the number of the questions each time; for example business strategy goals had four questions, scope of business strategy goals five question, competitive strategic orientation seven questions, organisational aspect of business strategy process nine questions, individual aspects of business strategy process three questions and technological aspects of business strategy process three questions.

Table 7.23 Exploring Business Strategy Variables (%s)

Business Strategy Dimension		Minimum	Mean	Median	Maximum
Concepts	All Concepts	18	36.16	37	45
Content	BS Goals	4	15.78	16	20
	Scope of BS Goals	7	18.46	18	25
	Competitive Strategy Orientation	12	27.08	28	35
Process	organisational Aspect	11	32.82	35	45
	Individual Aspect.	3	11.31	12	15
	Technological Aspect	3	11.56	12	15

Looking at the values on the first row of the Table 7.23 which presents all the concepts of business strategy, the minimum total score of 18 implies that at least one of the managers strongly disagreed with all the business strategy concepts; and the maximum total score of 45 implies that at least one of the managers strongly agreed with all of the business strategy concepts. The median total score is 37 which means

that 50% of the managers agreed or strongly agreed with all the business strategy concepts. The median value also indicates that the distribution of the total score for business strategy concepts is negatively skewed (weighted towards agreement). The minimum total score of 4 for all business strategy goals implies that at least one of the managers strongly disagreed with all the business strategy goals; and the maximum total score of 20 implies that at least one of the managers strongly agreed with the entire business strategy goals. The median total score is 16 which means that 50% of the managers agreed or strongly agreed with all the business strategy goals. The median value and the quartile values also indicate that the distribution of the total score for business strategy goals is negatively skewed (weighted towards agreement). Similar statements can be made about the summary statistics of the total score for the scope of business strategy goals, the competitive strategic orientation, and organisational, individual, and technological aspects of business strategy process. Also this finding may reflect the fact that most of the managers understood the dimensions of their business strategy. Overall, the sum of scores for the business strategy dimension shows that the distribution of all business strategy dimensions is negatively skewed. There is a high level of agreement with most of business strategy concepts, contents and process since the median of most is not far from the total score of agreement. Therefore, by exploring business strategy dimensions the third objective in this research is achieved.

7.7 Exploring IT Strategy Variables

This section explains the sum of total scores for IT strategy concepts, content and the process. It attempts to explore the important IT strategy variables in achieving the fourth objective of this research. The results presented on Table 7.24 show the summary statistics of the total score for IT strategy dimensions. By using the technique of total score of all the concepts of IT strategy by adding the Likert scores (1 = strongly disagree to 5 = strongly agree) for each of the 14 questions related to IT strategy concepts. A total score of 1 comes from strong disagreement on all 14 questions, 28 corresponds to disagreement on all questions, 42 to neutrality, 56 to agreement and 70 to strong agreement. The total score in the other rows on Table 7.24 also comes from using the same technique, adjusting for the number of questions every time. For example, support and advantages offered by IT strategy had nine questions, distinctive competence of IT eight questions, organisational information quotient five questions, organisational aspect of IT strategy process five questions, individual aspects of IT strategy process five questions, and technological aspects of IT strategy process five questions.

Table 7.24 Exploring IT Strategy Variables (%)

IT Strategy Dimension		Minimum	Mean	Median	Maximum
Concepts	All Concepts	26	47.62	47	65
Content	Support and advantage offered by IT strategy	10	38.22	40	50
	Distinctive Competence of IT	8	28.84	29	40
	Organisational Information Quotient	11	19.04	19	25
Process	organisational Aspect	10	17.59	18	25
	Individual Aspect.	2	7.37	7	10
	Technological Aspect	4	7.18	8	10

Considering the values given for all the concepts of IT strategy in the first row on the Table 7.24, the minimum and maximum total score are 26 and 65 respectively explains that the majority of managers agree with all the concepts of IT strategy. Surprisingly the median and the mean 47 and 47.62 respectively are closely and nearly the same. This implies that 50% of the managers agreed or strongly agreed with all the concepts of IT strategy. Also it draws a picture of the curve of the concepts of IT strategy that are negatively skewed. In the same way the total score for the other IT strategy dimensions can be described. In summary, this section has explained the sum of total score for IT strategy dimensions. It implies that the distribution of the dimensions of IT strategy is negatively skewed. There is a high level of agreement since the median score for all the dimensions of IT strategy is not far from the total score for agreement. Furthermore the finding from this section support the findings of IT strategy on section 7.4 in this chapter.

7.8 Performance of the Company

This section presents the sum of scores for company performance. The performance measurement in this research was developed to measure the perceived success of the organisation as viewed by managers. In measuring the performance of the company, the questions are adopted from a previous study (Khandwalla, (1977), which measured performance on the level of profitability, growth of sales, employee morale, financial strength and public image relative to the industry average. In this research, the subjective performance measure was correlated with an objective financial measure (performance indicators).Based on the organisational performance measures it asked about the organisational impacts of IT; in order to establish the link between IT and organisational performance.

7.8.1 Performance Indicators

Table 7.25 below shows the total score for performance indicators. The total score comes from adding the Likert scores (1 = strongly disagree to 5 = strongly agree) for each of the five questions related to performance indicators. A total score of 6 comes from strong disagreement on all six questions, 12 corresponds to disagreement on all questions, 18 to neutrality, 24 to agreement and 30 to strong agreement.

Table 7.25 Summary Statistics of Total Score for Performance Indicators

	Statistic
Mean	22.70
Median	23
Minimum	14
Maximum	30
Lower quartile	20
Upper quartile	25
Interquartile Range	5

Table 7.25 shows that the maximum total score of 30 implies that most of managers agreed with all performance indicators because it is reach strong agreement total score. According to the median total score of 23 more than half of managers agreed with performance indicators. The minimum total score of 14 also supports this finding in relation to the managers' acceptation of performance indicators. The lower and upper quartile values (lower = 20, upper = 25) indicate that the performance indicators are negatively skewed. To summarise, these results imply that most managers subscribe to most of the performance indicators that may contribute towards most of their performance indicators. The majority of the managers share the view of the agreement with the indicators of performance.

7.8.2 Impact of IT on Company Performance

The summary statistics of the total score for the impact of IT on company performance over the past three years is shown on Table 7.26 below. The total score comes from adding the Likert scores (1 = strongly disagree to 5 = strongly agree) for

each of the seven questions related to impact of IT on the performance. A total score of 7 comes from strong disagreement on all seven questions, 14 corresponds to disagreement on all questions, 21 to neutrality, 28 to agreement and 35 to strong agreement.

Table 7.26 Total Score for Impact of IT on the Performance

	Statistic
Mean	24.79
Median	26
Minimum	7
Maximum	30
Lower quartile	23
Upper quartile	27
Interquartile Range	4

Table 7.26 shows that the minimum total score of 7 suggests that minority of managers avoided the idea of no impact of IT on performance while the maximum total score of 30 implies that most of managers recognised that there is impact from IT on business performance. Based on the median total score 50% of the managers believe with the impact of IT on performance. The median also indicated that the direction of the curve of impact of IT on performance is creating a negative skewed direction. To summarise, these results imply that most managers subscribe to the impact of IT on all the performance.

7.8.3 Summary

This section has presented the sum of total score for the indicators of performance and the total score of the impact of IT on business performance. It has attempted to understand the relationship between the IT and organisational performance. The findings from this section show that the majority of mangers recognised most the indicators used to measure subjective performance. The summary statistics of the total score for the impact of IT on the organisational performance shows that most of the participants agree with the impact of IT on business performance. The findings from this section support the finding from section 5.5 on this chapter. This implies that there is impact from IT on business performance because it found similar results by using these two different statistics techniques. It found the majority of managers agreed with the impact of IT on business performance. The similarity of these results might offer some preliminary guidance to Libyan oil companies selecting or developing the indicators of performance and IT strategies.

7.9 The Ranking of Business Strategy variables

This section presents the results from the analysis of data on business strategy variables and how they rank in each company by using the average rank per manager technique to understand the important business strategy variables in Libyan Oil Companies. The participants were asked to choose from six business strategy variables; reducing cost, improving productivity, delivering new products and services, generating new revenue, improving front and back workplace, and

focussing on unified communication. They were asked which variables are important for a successful business strategy. At the same time they were asked to rank these variables in order of importance from 1 to 6 using number 1 as the most important, number 2 as the next most important and so on. The important business strategy variables are identified by using the average rank per manager technique. This technique shows that the variable with the smallest average rank per manager is the most important business strategy variable.

Table 7.27 Distribution of the rank of BS Variables in Libyan oil Companies

Average rank per manager / Business Strategy Variables	Ras Lanuf company	Sirt company	Jowfe company	Brega	Waha company	Gulf company	Zueitina company	Azawia company
Reduce cost	3.666	3.416	3.416	3.3	2	2.818	3.090	2.25
Improve productivity	2.166	1.75	2.916	2.5	2.636	2.454	1.636	1.666
Deliver new product and services	4	3.5	4	3.6	2.909	3.727	3.545	4.166
Generate new of revenue	3.916	4.166	4.75	4.8	4.181	3.909	4.818	4.583
Improve front and back workplace	2.916	3.166	2.833	3.0	4.454	3.727	3.818	4.166
Focus on unified communication	4.583	4.833	3.416	3.8	4.636	4.363	4.727	4.166

Table 7.27 above shows that the managers in Ras Lanuf Oil Company and Sirt Oil Company chose improving productivity as the most important business strategy variable. The average ranking of this variable for the managers is 2.166. The second most important variable in these companies was improving the front and back workplace and the third was reducing cost. The focus on unified communication

variable came last. For Jowfe Company, the smallest average rank for managers of business strategy variables was 2.833 for improving front and back workplace. This means that this variable is seen as the most important business strategy variable in this Company, followed by improving productivity with an average rank of 2.916 then reducing cost and focussing on unified communication with an average rank of 3.416 on each. However, generating new revenue is last in the rank of business strategy variables with average rank 4.75. In the Brega Company the three important business strategy variables as seen by most of the participants are improving productivity, improving front and back workplace, and reducing cost. However, generating new revenue is seen as the least important variable than the other variables. The average rank of reducing cost is 2, placing it in first position for the Waha Company. Improving productivity comes second with an average rank 2.636, then delivering new products and services with an average rank of 2.909. Focussing on unified communication is last for this company. The participants in the last three companies - Gulf, Zueitina, and Azawia - gave improving productivity averages of 2.454, 1.636, 1.666 respectively in the first place of important followed by reducing cost with average rank 2.818, 3.090 and 2.25 in the second then delivering new product and services with average rank 3.727, 3.545, and 4.166 respectively in the third. However, Zueitina and Azawia companies ranked two variables in the third place delivering new product and services and improving front and back workplace variables. Focussing on unified communication comes last for Gulf Company but in

Zueitina and Azawia companies generating new revenue variable come in the last of the rank of business strategy variable.

Table 7.28 the Rank of Business Strategy Variables in Libyan oil Companies

Company's Rank / Business Strategy Variables	Ras Lanuf company	Sirt company	Jowfe company	Brega company	Waha company	Gulf company	Zueitina company	Azawia company
Reduce cost	3	3	3	3	1	2	2	2
Improve productivity	1	1	2	1	2	1	1	1
Deliver new product and services	5	4	4	4	3	3	3	3
Generate new of revenue	4	5	5	6	4	4	5	4
Improve front and back workplace	2	2	1	2	5	3	4	3
Focus on unified communication	6	6	3	5	6	5	6	3

Table 7.28 shows that the three important business strategy variables are: improving productivity; improving front and back workplace; and reducing cost for three companies (Ras Lanuf, Sirt and Brega). The managers in Jowfe Company ranked business strategy variables in order of importance as follows: improving front and back workplace; improving productivity; focussing on unified communication; and reducing cost. Waha Company managers chose reducing cost as the most important variable, improving productivity as the second and delivering new products and services as the third. The three companies (Gulf, Zueitina and Azawia) chose

improving productivity; reducing cost; and delivering new products and services variables as the three important business strategy variables. Overall, the three most important variables for most Libyan oil companies are: improving productivity; reducing cost; and improving front and back workplace. This result may mean that most of the managers use these business strategy variables in their business strategy. These variables also may reflect the important business strategy (production efficiency, quality services and intensive marketing) and the goals of business strategy (continual improvement of business performance, becoming an industry leader and enhancing the company's corporate image by ethical business practice) in these companies. This means that there is integration between these variables and important business strategy goals.

7.10 The Rank of Information Technology Strategy Variables

In this section the results from the analysis of the data on information technology strategy IT strategy variables is presented using the average rank per manager technique to identify the important IT strategy variables in Libyan oil companies. The managers were asked to choose from twelve IT strategy variables - reducing time, reducing cost, increasing company size, increasing the growth of the company, increasing competitive rivalry, increasing profit level, increasing ability to differentiate, increasing market share, improving quality and services, using new technology, increasing brand strength, and increasing customer loyalty - which they think are important variables for success in their IT strategy. At the same time they

were asked to rank them in order of importance from 1 to 12 using number 1 as the most important , number 2 as the next most important and so on. By using the average rank per manager technique the important variables of IT strategy in these companies can be identified. The variable with the smallest average rank per manager is the most important IT strategy variable.

Table 7.29 Distribution of the Rank of ITS Variables/Libyan Oil Companies

IT Strategy Variables \ Average rank per manager	Ras Lanuf company	Sirt company	Jowfe company	Brega company	Waha company	Gulf company	Zueitina company	Azawia company
Reduce time	3	3.91	3.083	4.4	3.363	5.909	4.727	2.666
Reduce cost	3.25	5.666	3.333	6.5	3.727	3.818	3.909	2.25
Increase company size	7	6.916	6.75	7.5	6.090	5.363	5.636	5.333
Increase the growth of the company	4.833	7.333	4.914	5.3	5.090	5.454	4.727	4.166
Increase competitive rivalry	8.25	7.083	5.666	8.3	7.090	5.272	5.727	4.666
Increase profit level	7	7.666	7.083	8.1	5.636	6.090	6.454	7.916
Increase ability to differentiate	6.5	6.916	6.833	8.5	7.636	6.818	7.727	9.166
Increase market share	9.083	6.5	7.25	8	7.181	8.272	8.909	9.166
Improve quality and services	2.5	3.583	6.833	3.9	5	4.545	5.818	6
Used new technology	5.083	2.166	4.833	4.1	7.181	6.636	7.545	7.416
Increase brand strength	8	7.166	10.08	6.4	10.36	8.545	9.909	9.833
Increase customer loyalty	10.75	6.416	10.33	6.8	9.454	8.181	6.636	9

Table 7.29 shows that improving quality and services is the most important IT strategy variable for Ras Lanuf Company with an average rank 2.5. Reducing time is the second most important variable with an average rank of 3 and reducing cost is

third with an average rank of 3.25. Increasing customer loyalty and increasing market share are seen as the least important IT strategy variables by the participants in this company. In Sirt Company, respondents chose new technology as the first IT strategy variable contributing to the success of the company business with an average rank of 2.166. The second variable that can help IT strategy to be successful is reducing time with average rank of 3.91 followed by improving quality and services with an average rank of 3.583. However, the IT strategy variables that contribute least to business success are increasing profit level, increasing the growth of the company, and increasing brand strength with average ranks of 7.666, 7.333, and 7.166 respectively. The average rank on reducing time variable is 3.083, for reducing cost variable is 3.333, and for the use of new technology variable is 4.833. This implies that the participants in Jowfe Company chose these IT strategy variables and thought they are helpful in achieving success. The other Libyan oil companies chose different IT strategy variables as the important variables: Brega Company chose improving quality and services as the most important variable with an average rank of 3.9, using new technology with an average rank of 4.1, and reducing time with an average rank of 4.4. Waha Company used reducing time in the first position of IT strategy variables with an average rank of 3.363 followed by reducing cost with an average rank of 3.727 and improving quality and services with an average rank of 5. Gulf Company used reducing cost as the important variable in their IT strategy variables with an average rank of 3.818 then improving quality and services with an average rank of 4.545. Zueitina Company and Azawia Company

were alike in choosing the first two important variables from IT strategy variables. They chose reducing cost and reducing time as the most important variables. However, the other Libyan oil companies also ranked the variables with the highest average rank in the order of importance of IT strategy variables. Overall, the distribution of IT strategy variables between all Libyan companies is not clear and differs from one company to another. Some chose the same variables but not in the same ranking positions. These findings suggest that IT strategy variables made some contribution to the company success but that each company used different variables to achieve their success.

Table 7.30 The Rank of ITS Variables in Libyan oil Companies

Company's Rank / IT Strategy	Ras Lanuf company	Sirt company	Jowfe company	Brega company	Waha company	Gulf company	Zueitina company	Azawia company
Reduce time	2	3	1	3	1	6	2	2
Reduce cost	3	4	2	6	2	1	1	1
Increase company size	7	7	6	8	6	4	3	5
Increase the growth of the company	4	10	4	4	4	5	2	3
Increase competitive rivalry	9	8	5	11	7	3	4	4
Increase profit level	7	11	8	10	5	7	6	8
Increase ability to differentiate	6	7	7	12	9	9	9	10
Increase market share	10	6	9	9	8	11	10	10
Improve quality and services	1	2	7	1	3	2	5	6
Used new technology	5	1	3	2	8	8	8	7
Increase brand strength	8	9	10	5	11	12	11	11
Increase customer loyalty	11	5	11	7	10	10	7	9

Table 7.30 shows that there are three important IT strategy variables for Ras Lanuf Oil Company - improving quality and services, reducing time and reducing cost. In Sirt Company the important variables are different and the participants chose the use of new technology, reducing time, and improving quality and services as the most important IT strategy variables for success in their business. Jowfe Company used reducing time, reducing cost and using new technology as the important IT strategy variables. The three important IT strategy variables in Brega Company are improving quality and services, using new technology and reducing time. Furthermore, Waha Company used reducing time, reducing cost and improving quality and services as the important IT strategy variables; Zueitina Company used reducing cost, reducing time and increasing company size as the important variables of IT strategy variables. Azawia Company used reducing cost, reducing time and increasing the growth of the company as the important variables of IT strategy.

In summary, the three important IT strategy variables as seen by most of the participants in the Libyan oil companies are reducing cost, reducing time, and improving quality and services. This means that the managers in most Libyan oil companies believe that these variables are the important variables to contribute to their IT strategy and help their companies achieve their goals. This may imply that Libyan oil companies try to reach a superior ranking than their competitors by using IT strategy variables with cost reduction strategy, saving time and improvement strategy for their product and services. However, most companies rank increasing

brand and strength variables as the last important variables in their IT strategy variables rank.

7.11 Conclusion

The aim of this study is to investigate the strategic use of IT within Libyan oil companies, find the important IT strategy variables and business strategy variables, and then establish the relationship between them. This chapter has analysed the data collected from the questionnaire. A total of 91 managers from 8 oil companies in Libya participated in this study. The high response rate from the target population demonstrates the success and acceptability of the survey. The credibility and validity of the survey could also be argued to reflect the position and educational levels of the respondents. In so doing, the study was able to demonstrate the use of information technology strategies and business strategies in Libyan oil companies. In addition, the study surveyed the important IT strategy and business strategy variables in the Libyan oil industry and established the relationship between them. The key findings are as follows:

- The managers' age indicated an aging workforce in these companies and limited opportunity for gaining wider experience on the different job functions in the company.
- The study identified three important business strategy concepts in these companies: production efficiency, quality service and intensive marketing. Their importance is demonstrated by the high level of agreement by most of

the participants. The study equally observed that the managers in these companies do not give importance to price reduction as a business strategy.

- This study identified the content of business strategy, business strategy goals, the scope of business strategy goals and the competitive strategic orientation. It found that the most important business strategy goals as identified by all the managers include: continuous improvement of business performance; becoming a leader in the industry and enhancing their corporate image with ethical business practice. The most important scopes of business strategy goals as identified by the managers include diversifying into other business areas, expanding their business operations into other countries or regions as an effective way to enlarge their market share and to diversify, as well as to harbour the idea of acquiring another company in that business. The managers further identified higher operational efficiency which enables them to be more competitive by differentiating their products/services with better quality, effective strategic alliances based on a forward looking and long term perspective undeterred by short term economic fluctuations, and supporting their staff to generate innovative business and/or marketing ideas as the important competitive strategic orientation.
- This study examined the process of business strategy, organisational aspects, individual aspects and technological aspects and found that most managers agreed with most of these aspects of the business strategy process. The important organisational aspects of business strategy are: 1)they provide

continuous skill development for their staff in acquiring and developing the necessary knowledge and competence for the effective development of business strategies; 2)they have a formal process/model of involving business managers and IT professionals to evaluate the effectiveness of their business strategic plans; and 3) When they plan their business strategy, they emphasise the extent to which information technology/systems can actually help them in their business operations. The important individual aspects that were seen important by all managers are: 1) when they plan their business strategy, they emphasise the extent to which information technology/systems can actually help them in their business operations; and 2) they depend on competent managerial skills so that the formulated business strategy plans can be implemented timely, smoothly and effectively. The important technological aspects that were seen important by all managers are: 1) the success of their business strategy planning depends very much on the support of the appropriate information systems architecture in providing essential data analysis, forecasting, simulation and processing; and 2) when they plan their business strategy, they emphasise the capabilities of information technology/systems, which can actually differentiate their product and/or services from their competitors. This result suggests that most of the managers use these organisational, individual, and technological aspects in their companies when they plan their business strategy process.

- From the respondents' response, this study identified seven IT strategy concepts pursued by the companies studied. First, they treat the decision of IT investment independently and second they used IT to solve medium to long term problems. Third, managers always aim to get the most out of data technology. Fourth, they strived to better manage their IT resources and fifth, concerned a greater level of integration of their system. Sixth, they distributed the provision of IT facilities and support through the organisation and lastly the primary benefits achieved through IT are improved productivity and efficiency. These concepts appear to be pursued by most of the managers in their daily work routines in their companies.
- This study identified the content of IT strategy as: support and advantage offered by IT; distinctive competence of IT; and organisational information quotient. The study found a high level of agreement among all managers (top managers, IT managers, finance managers and other managers) with all the IT strategy content. All managers agreed that the three areas which received support from the existing IT facilities are pricing/cost reduction, product differentiation and production efficiency. This suggests that the existing IT infrastructure employed in the companies contributes towards supporting these strategies. However, the areas that were seen to receive the least support from the existing IT facilities are different. This result could be explained by the lack of focus given to these areas as far as IT deployment is concerned. The important distinctive competences are: 1) the strategic intent

of their IT is to support and strengthen their planned business initiatives and 2) the information systems used in these companies can assist them in formulating new business strategies. This result indicates that most managers in these companies used these distinctive competences in their IT content. The important organisational information quotient as seen by all the managers are the ability to design a scalable platform and the ability to design and use IS according to business strategy. This implies that these organisational information quotients appear to be used by all the managers in these companies.

- This study has identified the process of IT strategy - the organisational, individual aspects and technological aspects. It found that there is high level of agreement by all managers on all the aspects of IT strategy process. The first organisational aspect (they set up formal structure involving IT professionals and business managers to plan their ITS) is the important aspect of IT process from most of the managers followed by the second (they have formal planning process to assess whether the goals and scope of their IT strategy are viable) and the third (they have formal planning process to evaluate the effectiveness of their IT strategy plans) aspects. This means that these three organisational aspects are adopted by most of managers in their work. The first individual aspect (they depend on competent IT professionals and their managerial skills so that the formulated information systems plans can be implemented timely, smoothly and effectively) is seen as the most

important aspect by most of managers in these companies. This suggests that most managers took account of these two aspects and focused more on the first aspect than the second. The first technological aspect (When they plan their IT, they always explore the capabilities of IT that can actually differentiate their product and/or services from their competitors) is seen as the most important aspect by top managers and finance managers but the second aspect (The success of their business strategy planning depends very much on the support of the appropriate IT architecture in providing essential data analysis, forecasting, simulation and processing) is seen as the most important aspect by IT managers and other managers in these companies. These findings indicate that most of the managers used these two aspects and some focused more on the first aspect and others focused on the second aspect. Furthermore, these important aspects of IT strategy are linked to the important IT strategies that are seen as important strategies to support business strategy in these companies.

- This study explored the performance of the company evaluation with a view to understand the relationship between the organisational issues and performance variables. It was correlated with an objective financial measure (performance indicators). The study has found a high level of agreement among all managers with most of all the indicators of performance. Most managers saw finance liquidity (cash flow) as the most important indicator to evaluate the performance of their companies followed by the return on sales

indicator. Based on the organisational performance measures, the study strived to identify the organisational impacts of IT. It attempted to look at the link between IT and organisational performance and found that most managers see the operational impact of IT on the performance of the company as the most important impact. They agreed with the fact that IT has time saving/speeding up their tasks in these companies and IT helped them to reduce the administration cost. This means that the impacts of IT in these companies are all related to the operational impact rather than the control of management impact and strategic impacts. The impact of IT is also related to the important IT strategies to support business strategy in these companies studied that are used.

- This study explored the dimensions of business strategy concept, content and process. It found that the vast majority of the managers agreed with most of the business strategy concepts, content, and process. The median value indicates that the distribution of the total score for business strategy concepts, contents, and process is negatively skewed. This distribution implies that the majority of the participants in the area of agreement with business strategy concepts, content, and process.
- This study explored the three dimensions of IT strategy: concept, content and process. It found that the median total score of these dimensions implies that most of the managers agreed or strongly agreed with all the concepts, contents, and process of IT strategy. The median value also indicates that the

distribution of the total score for these dimensions of IT strategy is negatively skewed (weighted towards agreement). It clearly demonstrated that most of these three dimensions appear to be used in the Libyan oil companies studied.

- This study identified business strategy variables and ranked them to investigate the important business strategy variables. The study has found that the three important variables used in most Libyan oil companies are: to improve productivity, to reduce cost and to improve front and back workplace. These variables also may reflect the important business strategy (production efficiency, quality services and intensive marketing) and the goals of business strategy (continual improvement of business performance, becoming an industry leader and enhancing the company's corporate image by ethical business practice) in these companies. This means that there is integration between these variables and important business strategy and important business strategy goals.
- This study identified IT strategy variables and ranked them to investigate the important IT strategy variables. The study observed that the three important variables employed in most Libyan oil companies are to reduce cost, to reduce time, and to improve quality and services. This implies that the managers in most of Libyan oil companies employ these variables in their IT strategy in their work. However, most companies rank increasing brand and strength variables as the least important variable.

The above findings will be discussed in relation to the literature reviewed earlier in chapter 3, 4 and 5 in the next chapter.

CHAPTER EIGHT

DISCUSSION

8.1 Introduction

In chapter five, the data gathered for this study were presented and analysed. Chapter six discusses the findings within the context of the literature reviewed on IS strategy and competitive advantage. It includes the following sections: Section 8.2 discusses the findings relating to business strategy variable that was divided into three sub sections; Section 8.2.1 discusses the findings concerning the concepts of business strategy; Section 8.2.2 discusses the findings regarding business strategy content : goals, scopes of these goals and competitive strategic orientation of business strategy; Section 8.2.3 discusses the findings relating to the process of business strategy, in the organisational, individual and technological aspects of business strategy process. Section 8.3 outlines the findings concerning IT strategy which also are divided into sub sections; Section 8.3.1 discusses the findings about the concepts of IT strategy; Section 8.3.2 discusses the findings regarding the content of IT strategy: support and advantage offered by IT, the distinctive competence of IT and the organisational information quotient. Section 8.4 deals with the discussion findings relating to the impact of IT on the performance of the company; Section 8.5 presents the discussion of the findings relating to the rank of business strategy variables; Section 8.6; discusses the findings concerning the rank of IT strategy; Section 8.7 provides the contribution of this research whilst Section 8.8 concludes the discussion with research conceptual model.

8.2 Business Strategy (BS)

This section discusses the findings relating to business strategy concepts, content and the process as follows.

8.2.1 Concept of Business Strategy

This study found the most significant concept of business strategy in Libyan oil companies are production efficiency, quality service and intensive marketing. Interestingly, the managers did not consider price reduction strategy as an important strategy. They see price reduction as the least significant business strategy. However, Hussin et al. (2002) found that the three important business strategies are quality service, quality products and production efficiency. Also research by Pratten (1991) found the same result as Hussin et al. (2002). However, they perceived market intensive strategy as the least important business strategies whereas; in this research intensive market strategy is seen as one of the most important strategy in Libyan Oil Companies. This difference may be because of the different economies and the context of Libyan oil companies. Also this may be because the oil is an important product in the economy of Libya.

Furthermore, this study found that the price reduction strategy was the least important strategy. This means that using price reduction strategy as the key competitive advantage factor is not supported by this research. However, Porter (2004) in the generic strategic model suggested that cost differentiation strategy can be used to achieve competitive advantage, also Leitner and Idenberg (2010) stated

that oil companies can have basic types of competitive advantage that are related to low cost and differentiation. Companies use a price reduction strategy to reduce the cost of their production/ services. According to the review in the literature about price reduction strategy most of the researchers agree with using this strategy to achieve competitive advantage. This difference can be attributed to the price strategy in Libyan oil companies. The oil companies in Libya do not have responsibility for the price.

8.2.2 Content of Business Strategy

This section discusses the finding relating to business strategy content: business strategy goals, the scope of business strategy goals and the competitive strategic orientation. In general, this study found most of the participants agree with most of the statements of the content of business strategy. The distribution of the content of business strategy is negatively skewed. This may be because of that most of the participants are highly qualified and they see the importance of business strategy content.

Regarding the business strategy goals, the finding of this research is that the three business strategy goals are: becoming a leader in the industry; continual improvement of business performance; and enhancing corporate image with ethical business practice. These significant goals of business strategy are related to each other. The first goal is that the companies attempt to be ahead of their competitors. To do that, they must improve their products and services. They also should improve

their performance but they should choose the ethical business practise and they should not fight their competitors to achieve their goals.

The important scopes of business strategy goals are diversification into other business areas, expanding their business operations into other countries or regions, and diversify through merger and/or acquisition. These scopes are related to the business strategy goals. The Libyan oil companies are always trying to expand their production into other countries and different areas. They try every time to find other countries to sell their products and services to improve their performance. Libyan oil companies are looking for high price when they sell their products. This supports the findings from this research that suggests that the companies studied are looking to diversify their scope and expand their business operations into different countries or regions. Furthermore, these scopes of business strategy goals supported the goals of business strategy. This means that these companies plan their goals and the scopes of these goals in the line to support each other.

The findings concerning the third content of business strategy competitive strategy orientation is that participants believe that higher operational efficiency would enable the company to be more competitive by differentiating their products/services with better quality; effective strategic alliance which should be based on forward looking and long term perspectives and not deterred by short term fluctuations in economic environments; and encouragement and support for their staff to generate innovative business and/or marketing ideas are the most significant competitive

strategy orientation. The observation from this finding is that the competitive strategy orientation also supports business strategy goals and scopes of goals. They used differentiation strategy to make their products/ services differ from their competitors with better quality. They use effective strategic alliance and encourage and support their employees to innovate new ideas that help the companies to be more competitive. All these strategies lead to the achievement of their goals. In addition, these findings imply that these companies have a good plan for their business and their goals. However, there are different studies which studied the content of business strategy such as Fahey and Christensen (1986) who defined the content domain of business strategy as embracing decisions about the goals, scope, and/or competitive strategies orientation. They reviewed and evaluated different important dimensions of business strategy content such as goals diversification, strategic groups, market share, competitive strategy taxonomies, and stages of market evolution to find the relationship between the environment conditions, strategic decision, and performance. They found that the performance of the company was strongly affected by how a company positions itself within a given industry. This means that the content dimensions of business strategy affected the business performance of these companies because the position of the company in the industry is pointed by this content of business strategy. Furthermore, some of the previous research used the content of business strategy dimension to develop models to integrate business strategy with IT strategy. For example, Shu (2002) used business strategy goals to consider the content of business strategy in developing his

model to find the effect of content and process of business strategy on performance. He found that good content of business strategy or simply good strategy itself would lead to good business performance. Sabherwal and Chan (2001) focused on the content of business strategy and they found positive impact on business performance in some of the organisations studied. Also Faryabi et al. (2013) studied the alignment between business and IT and its association with business performance. They investigated the effects of business strategy orientation and found that there is a significant correlation between business orientation and the firm's performance. The result provided positive impact on business performance. However, the findings from the previous research support the findings from this research. There is a positive impact from business strategy on business performance. Furthermore, this research determined the content of business strategy that suggested by the participants as the most significant of business strategy in their companies. This finding is one of the contributions of the study. This finding gives a clear picture on the content of business strategy used in the companies' studied by investigating their business strategy content. These contents of business strategy may be used by Libyan oil companies in their future business to improve their business performance as it can be used also in further business strategy research in the companies studied.

8.2.3 The Process of Business Strategy

This section discusses the findings the study on the process of business strategy in relation to organisational, individual and technological aspects. The finding from

this study indicates that the distribution of the aspects of business strategy process is negatively skewed. It reflects the high level of agreement of most of managers in Libyan oil companies with all these aspects of business strategy process. This may reflect the high level of education of the participants. They understand the importance of the process of business strategy in achieving positive impact on the business performance. It also may reflect their experience in their jobs in these companies. They are in positions of making decisions and they know that these aspects of business strategy are very helpful for their company's competitive advantage. Furthermore, the key organisational aspects of business strategy were continuous skill development; formal process in evaluating business plans; effective communication and interaction; and looking for new business initiative. These business strategy aspects help the process of business strategy to be able to develop because business strategy process gives the employees opportunities to use their skills and idea in improving and developing this strategy process. also effective communication and interaction; and looking for new business initiative aspects reflects that these companies trying to increase the level of their employees' satisfactions. The effective communication and interaction aspect lead to good communication inside the company between the different departments and managers also increase strength and connection between business strategy processes.

The most significant individual aspect was seen by all managers are competent managerial skills for effective strategy implementations and empowerment in the decision-making process. These aspects imply that the employees have a chance in

decision-making process that leads them to be more satisfied. The technological aspects were seen by most of the managers as significant are effective role of information system architecture in strategy process and IT support during the planning process. These aspects reflect that IT is used to support business strategy. All these aspects of business strategy process are part of the set that affect the business performance of the companies studied.

This study found that all of these aspects of business strategy imply positive impact on the business performance in these companies. However, Olson and Bokor (1995) studied the effect of business strategy on business performance by using the process and content dimensions of business strategy. They found that the performance of firms, rapidly growing firms is influenced by the planning formality (strategy process) and product/services (strategy content). Similarly, Shu (2002) used the process dimension of organisational, individual, and technological aspects. He found that there is a positive impact on business performance of the company but he argued that this impact should come from a higher order construct called strategic fit. Strategic fit is the strategic alignment between a set of elements of strategic importance in IS and business strategies. This study supports these two studies which used the content and process dimensions of business strategy in terms of the impact on business performance. However, these two studies did not identify the important aspects of business strategy in their research. The important aspects are identified gives a clear picture to the company in their planning in the future. It helps the company in choosing which aspects are needed to focus on to increase the

positive impact on business performance in the future. As suggested by Tallon (2007) the reason that some process aspects are more important than others could be because of the differences in strategic foci, which is in support of why it is important to identify the key aspects of business strategy process.

8.3 IT Strategy

This section discusses the findings concerning IT strategy concepts, content and the process of IT strategy as follows.

8.3.1 Concepts of IT Strategy

The findings from this study indicate that most of the concepts of IT were adopted by all the managers in the Libyan oil companies. The concepts that were adopted are: treating the decision of IT investment independently; using IT to solve medium to long term problems which is a concern with getting the most up to date technology; a concern with how to better manage their IT resources and to integrate their systems better; distributing the provision of IT facilities and support through the organisation; and the primary benefits of IT are improved productivity and efficiency. This means that these companies are solving their medium and long term by using IT, and perceived that their decisions about IT investment are more independently; their IT does not match their business need. They are getting the most up to date technology; they achieved higher degree of system integration; they are more decentralised with IT management; they are also more concerned with IT management, and their sought of IT benefits on primary basis. However, there is

some similarity with Hussin et al. (2002) findings in these concepts. Their findings agreed with three of this study's findings that the companies are more long term oriented; they achieved higher level of systems integration; and they are more concerned with IT management. However, their findings reversed with the other concepts on this study's findings the companies more formality in decision making of IT investment, their IT matching their business need, their systems more centralised and they have wider sought IT benefits basis in their organisation. While most of the literature of IS suggested that decentralisation of IS is better than centralised support, this may be true for large companies. In this case the finding from this research supported this suggestion.

8.3.2 Content of IT Strategy

This section discusses the findings in relation to the IT strategy content in terms of: support and advantages offered by IS, distinctive competence of IT, and organisational information quotient. There are different studies on the content of IT strategy such as Das et al. (1991), Fahey Christensen (1986), Henderson and Venkataman (1992), Sabherwal and Chan (2001), Duhan et al. (2001), Schniederjans and Cao (2009), Yayla and Hu (2011), and Faryabi et al. (2013). Most of these studies were similar with this study in term of using the content of IT strategy as the key factor in their research.

Das et al. (1991) represents the first attempt in integrating the content and process dimension of IS strategy. They proposed a model that clarifies the link between

strategic management information systems (MIS) planning and competitive strategy. They used distinctive competence as one of the content of IT strategy and they found the link between competitive strategy and IS planning is important for superior financial performance. This study supports their findings in terms of the significance of specifying the nature of the dimensions of IS strategy and its importance in the link between business performance and competitive advantage.

Sabherwal and Chan (2001) studied the alignment between business strategies and IS strategy by focusing on the content dimension. They found positive impact on business performance in some of their case studied. There is similarity between the findings from this study and their findings.

8.3.2.1 Support and Advantages Offered by ISS

Hussin et al. (2002) study, found that the important business strategies received support from IT were quality service, pricing reduction and production efficiency. However, the new market strategy was seen as receiving least support from IT. This study found that pricing/cost reduction, product differentiation and production efficiency strategies are the most important business strategies received support from IT. These findings are not far from Hussin et al. (2002) findings. The difference is that this study used product differentiation strategy instead of quality service strategy and the order of the business strategy receiving support from IT also different. There is similarity between this study and Hussin et al. (2002) in that both agree of that IT strategy supports business strategy. This has led to conclude that

there is alignment between IT strategy and business strategy because of this support. Chan et al. (1997) measured business strategy orientation, information systems strategic orientation, and strategic alignment. They used IS support for business strategic orientations (support for the six business strategy attributes), IS support for aggressiveness, analysis, internal defensiveness, external defensiveness, futurity, proactiveness, riskiness, and innovativeness. They identified the strategic intents of IS in relation to business strategic orientations. They developed the measurement for IT strategy which assesses specific uses of IT in terms of the support they provided for the nine business strategies. Their findings indicate that there is a positive association between innovation and market growth and negative effects on reputation and finance performance. Their findings are not similar to this study finding because they found negative effects on business performance.

Sabherwal and Chan (2001) extended the study by Chan et al. (1997) and used Miles and Snow (2003) typology as the ideal business strategy. They identified an ideal IT strategy for each of the business strategies. They emphasised the content of the strategy rather than process strategy. They used four IS strategy attributes; operational support systems, market support systems, interorganisational systems, and strategic decision support systems with three types of IS for efficiency, flexibility, and comprehensiveness. They stated that operational support systems are most appropriate for defenders strategy and least appropriate for prospector's strategy. Prospectors have greater marketing expenditures than defenders, and analysers ranked high in terms of the use of market information systems. Also, they

stated that strategic decision support systems play an important role in all the three business strategy attributes. The findings from this study support Sabherwal and Chan (2001) results because of the similarity between the findings. They found that there is an effect on business performance from business strategy and IS strategy in some organisations studied and they agree with that IT strategy supports all business strategies that used in their study. Faryabi et al. (2013) used Chan et al's (1997) model with changes to eliminate the effect of variable IS effectiveness on business performance. They found that business strategy orientation, IS strategic orientation, and strategic alignment of IS and business strategy have positive impact on firm performance. Their findings are similar to the findings from this study in relation to the positive impact on the performance of the company but they did not clarify which business strategy received more support than other strategies. The findings of this section implies that there is an alignment between IT and business strategy. Previous studies on the alignment between IT and business strategy suggest that if IT strategy support business strategy this means that there is alignment between IT strategy and business strategy. However, in this research study, there is significant support and advantage from the existing IT to the business strategy in these companies.

8.3.2.2 Distinctive Competence of IT Strategy

The findings of this study indicate that IT strategy has different distinctive competence. The most important of them are the strategic intent to support and

strengthen planned business initiatives, the way the information systems used in these companies can assist them in formulating new business strategies, building their own IT by internal research and development involving IT professionals and business managers because the systems so designed can specifically support their business strategy, and the fact that IT built with state of the art technology in hardware, software and information communication can best support business strategies. However, Das et al. (1991) used the distinctive competence as one of the content dimension of IS strategy. They defined it as the major ingredient emphasised by a firm in designing and operating its MIS and add value to its products and services. The distinctive competence indicated the cost of information processing, flexibility to provide different classes of information, and ability to provide specialised information. This study used the same definition of this dimension. It identifies the important distinctive competence. But in Das et al. (1991) study they did not define the important distinctive competence in their research. This definition of the significant distinctive competence of IT strategy clarifies the distinctive competence as one of the set that make the impact on business performance. But other studies just used them to find the link between MIS planning and competitive strategy.

8.3.2.3 Organisational Information Quotient

The findings from this study indicate that the most significant aspects of organisational information quotient are the ability to design scalable platform and

the ability to design and use IS according to business strategy. This finding reflects the view of integration between IT strategy and business strategy in Libyan oil companies. Libyan companies tried to use their organisational information quotient in the way that integrates IT strategy with business strategy. They used the ability of IS according to their business strategy this make business strategy and IT strategy working in supporting and integration direction. However, Service and Maddux (1999) studied building competitive advantage through the organisational information quotient and emphasised on the significance of organisational information quotient. They suggested that the essential contents of IS strategy are aiming, capturing, balancing, measuring, and designing. They found that in order to achieve sustainable competitive advantage IS should be linked to company's competence and business strategy. This study found the ability of designing are significant in organisational information quotient to be scalable platform and use IS to support business strategy. This supports the findings from Service and Maddux (1999) study. There is similarity in relation of the important of designing IS in the organisation as one of the content of IT strategy that affect business performance and therefore achieve sustain competitive advantage. Also Shu (2002) used organisational information quotient as one of the content of IT strategy in his research. He found all the content of IT strategy is part of the set that alignment with business strategy and affect business performance. This research study's findings also support Shu (2002) findings.

8.3.3 The Process of IT Strategy

This section provides the discussion of the findings on the process dimension of IT strategy in relation to organisational, individual and technological aspects. The finding of this study shows that the important organisational aspects are setting up a formal structure involving IT professionals and business managers to plan their IT strategy, formal planning process to assess whether the goals and scope of their IT strategy are viable, and a formal planning process to evaluate the effectiveness of their IT strategy plans. Lederer and Sethi (1991) studied the relationship between the problems that arise during strategic information systems planning, identified the categories of these problems and then assessed their relative importance. They suggested the issues that related to the planning and implementation process of IS strategy and discussed the infrastructure of IS within the organisation in relation to the IS architecture and its implementation. This research suggested that the organisation needs to have good planning process supported by the appropriate hardware. The finding of this research supports their findings. It found that formal planning process is important aspects of IT strategy process. Also their suggestion supports this research finding in relation to that business strategy need support from IT strategy.

Depending on competent IT professionals and their managerial skills so that the formulated information systems plans can be implemented timely, smoothly and effectively is seen as the most important individual aspect by most of the managers.

Peppard and Ward (2004) found that there were no any contributions coming from having technical IT skills or IT infrastructure to the duration of competitive advantage. This research's finding reverses their finding in relation to the important of IT skills. However, this research finding supports Dehning and Stratopoulos (2003) who concluded that the companies that have good information systems management skills are likely to be a source of sustainable competitive advantage.

Regarding to the technological aspect of IT strategy process top managers and finance managers are seen exploring the capabilities of IT that can actually differentiate their product and/or services from their competitors is the most important technological aspects of IT strategy process but IT managers and other managers selected support of the appropriate IT architecture in providing essential data analysis, forecasting, simulation and processing as the most important aspect. Indeed, this study identified the important aspects of IT strategy. It has found that the aspects of IT strategy process are also integrated with business strategy aspects.

However, there are different research used for the process dimension of IT strategy such as, Das et al. (1991), Henderson and Venkataman (1992), Segar and Grover (1999), Samela el at. (2000) and Shu (2002). Das et al. (1991) proposed five dimensions in the process of strategic MIS planning (formality, scope, participation, influence, and co-ordination) and specified the dichotomous nature of IS strategy content and process but they did not determine the important issues of the planning

process. They suggested that a fit between IS strategy planning and competitive strategy could be for superior financial performance. Henderson and Venkataman (1991) defined the process dimension by the infrastructure and process. They used evaluation and decision on IT architecture, IT infrastructure development, maintenance and control, and IT management skills development, to identify the process dimension of IS strategy. They recognised the importance of the alignment between IS strategy and business strategy because of its potential impacts on the performance of the company. Their research has found a relationship between IS strategy and IS strategy positioning in the deployment of information technology with its approach to manage the functions of IS within the organisational context. Furthermore, Segar and Grover (1999) studied the process profiles of IS planning and identified five distinct profiles of IS strategy planning. They used formalisation, flow, participation, consistency, focus, and comprehensiveness as profiles focus on the process dimension of IS planning. They conclude that such profiles can be broadly related to the process based characteristics of IS planning. Similarly, Samela et al. (2000) studied two approaches of IS planning: comprehensive approach and incremental approach. According to these approaches the process dimension are plan comprehensiveness, approach to analysis, planning organisation, basic for decision, and plan control. They found that the comprehensive formal process of IS planning is more success than the incremental approach on the turbulent environment. Shu (2002) used the same process dimensions that are used in this research. He found that by using IT content and process dimensions, there was positive impact on the

organisational performance. Most of these research found that IT strategy process dimension has contribution on the impact of business performance and competitive advantage. Also they conclude the fit/integrate between IT strategy and business strategy affect business performance. This means that the findings from this research support their findings in some point.

8.4 Impacts of IT on the Performance of the Company

This study finding indicates that the important indicators that used to evaluate the performance of the companies are finance liquidity (cash flow) and return on sales. This means that these companies used financial measurements to measure their performance. The finding from this research indicated that there is positive impact of IT on the performance of the companies. The highest impact of IT was on the operational level and management control level in these companies. This study supports the researches who found positive impact of IT on the performance of the company although they used different indicators of performance. For example, Earls et al. (1996) and Elliot and O'Dell (1999) investigated the impact of IT on performance using performance indicators such as income/profit of the company and they found positive impact. Others such as Olalla (2000), Schmid et al. (2001), and Shaukt and Zafarullah (2009) used different indicator for company performance like customer satisfaction, supplier/customer links and job interest of employees, and found that after the company implement the IT they had positive impact.

This study's finding reject Palmer and Markus (2000) study who matched between IT and business strategy and they did not find any statistical support for the effect on performance from the alignment between IT and business strategy. They stated that the firm tends to choose IT strategy that is suit with their business strategy. However, this study support Cragg et al. (2002), Schniederjans and Cao (2009) Yayla and Qing (2012) and. Faryabi et al. (2013) study the positive impact from IT strategy and business strategy on business performance as explains as follows:

Later Cragg et al. (2002) studied the effect of strategic alignment on the performance and they found positive impact on performance of the firm also they reported that firms with high alignment are better than other firms with low alignment. Schniederjans and Cao (2009) study indicated a different approach to find the effect of IT and business strategy on performance. They used four dimensions for the operations strategy; flexibility, quality, delivery, and cost. They measured how IT supports these four dimensions. They stated that there is a significant direct relationship between business strategy and IT strategy together on business performance. Furthermore Yayla and Qing (2012) studied the impact of IT strategy and business strategy on business performance. They found that there is significant impact on business performance from IT strategy and business strategy together across all of the choices of strategic orientation-defender, prospector, or analyser. Faryabi et al. (2013) found the alignment between business and IT associated with business performance. They also found that there is a positive effect on business

performance from business strategy and IT strategy stronger than the effect of business strategy orientation and IS strategy orientation.

8.5 Rank of Business Strategy Variables

This study has found that the three important business strategy variables that are used in most of all Libyan oil companies are: Improve productivity; Reduce cost; and Improve front and back workplace. This means that these companies apply these variables in their business strategy to achieve their goals. They try to achieve the efficiency and effectiveness by using these business strategy variables. According to the findings on business strategy concepts section that discussed in the beginning of this chapter these variables related to the significant business strategy in Libyan oil companies strategies (production efficiency, quality service and intensive marketing). However, Arthur (1992) studied business strategy and industrial relations systems in American Steel Minimills. He used different variables of business strategy such as different low cost, size, products, grades, customer contract and open market. He found that these companies produced their products in a number of different shapes or sizes and emphasised on differentiation over low cost. They sold their products in both contract customers and on the open market. This study support their finding because they focused on differentiation of their products with different size or shapes this reflect the improve productivity variable on this research. They also used low cost differentiation strategy that also used to improve their products and services this implies reduce cost variable in this research.

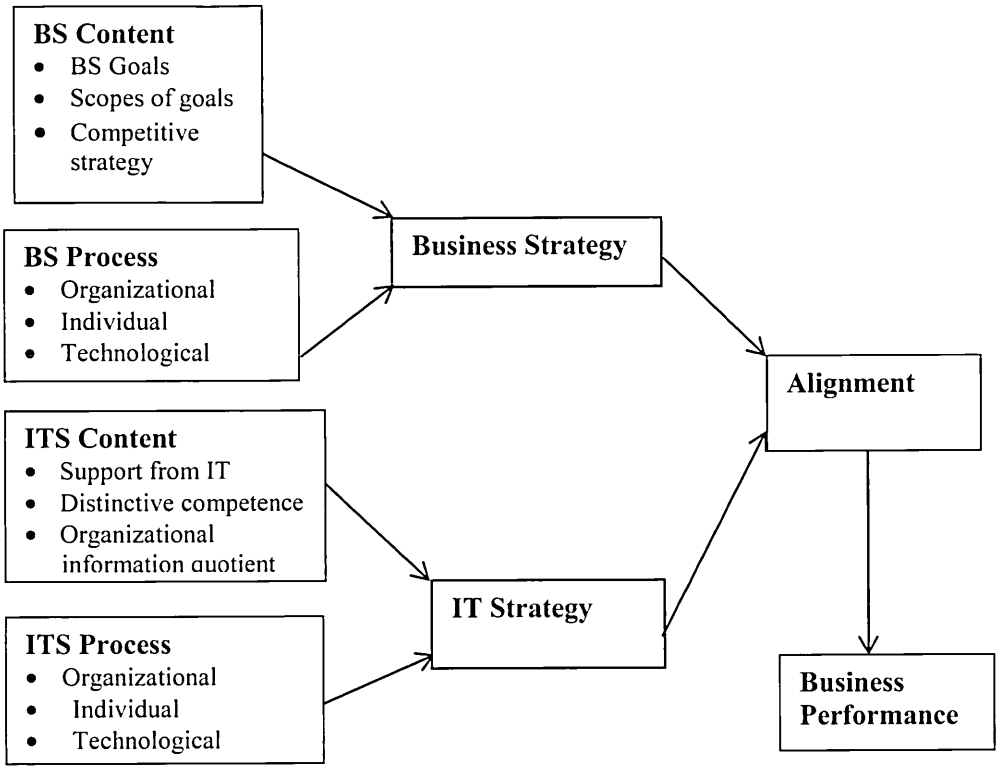
8.6 Rank of IT Strategy Variables

This study has found that the important IT strategy variables are cost reduction, time reduction, and quality and services improvement. However, the last important IT strategy variable is increase brand and strength. This means that price reduction and saving time with the production of good products and good services to their customers are still the main purpose of these companies to achieve their goals. However, this study finding supports the following research for example research in the UK (Computer Futures, 2011) used the following variables of IT: 1) improve productivity, 2) deliver new products and services, 3) generate new source of revenue, 4) improve front and back office integration and 5) focus on unified communication. They found that the three important variables are: improve productivity, deliver products and services and focus on unified communications. Also another study in Belgium (Computer Futures, 2012) used the same IT variables and added more IT variables such as defining strategy, new products and services, more commercial, more externally facing, cost and time efficiencies, increase scope of services offered. They found the important variables are cost and time efficiencies, improve productivity, defining strategy and increase scope of services offered. Their findings were similar to this research's findings. They used IT strategy variables that used in this research and they found these variables were also important variables in IT strategy variables.

8.7 Research Conceptual Model

This study developed a conceptual model that links business and IT strategies with business performance. This model (see figure 8.1 below) shows the interactive nature between the content and process domains of business strategies, IT strategies, and organisational performance. This diagram is a contribution to the study of business strategy, IT strategy and business performance in relation to competitive advantage. It identifies the nine business strategies that are used in this study, the issues of IT strategy concepts, and IT and business strategy dimensions (content and process). The diagram demonstrates that the notion of IT and business strategies can be operationalised by a comprehensive set of constructs.

Figure 5.1 Research Conceptual Model



Developed by the Author from the Analysis of the Research Data

The variables within the content of IT and business strategy dimensions have positive impact on the business performance. This research found high level of support from IT strategy to all the business strategy. The view from this research is that it is not necessary to have a positive impact on business performance directly from the content or the process dimensions of IT strategy or business strategy alone. The findings from this research indicated that the positive impact on business performance should come from a higher order construct of the IT strategy or business strategy content and process. This can be perceived as the strategic

alignment between the important elements of strategy that have been operationalised as the latent constructs in the content and process domains. These elements are support and advantage offered by IT, distinctive competence, organisational information quotient, strategic goals, scope of strategy content, and competitive strategic orientation, with adding the aspects of strategy process organisational, individual, and technological aspects.

However, Das et al. (1990) model links external environment, competitive strategy, strategic MIS planning and financial performance to align IT strategy and business strategy. They found there are impact on business performance form the fit between strategic MIS planning and Competitive strategy. This study finding supports Das et al. (1990) research because the finding is that there is a positive impact from the alignment between IT strategy and business strategy. Also Henderson and Venkatraman (1992) used the content and process dimensions to align IT strategy with business strategy. They show the ways how to align IT strategy and business strategy but they did not show the impact on business performance. This study used the two dimensions of IT strategy and business strategy to align them as Henderson and Venkatraman (1992) did. However, there is a difference between them in the content and process dimensions which were used in these two studies. Hussin et al. (2002) used the content dimension to develop a model that illustrates the alignment between IT strategy and business strategy in SAM companies. They found that there is alignment between IT strategy and business strategy and there is positive impact on business performance. This study supports their finding. Also Shu (2002)

established Integrated Strategy Alignment Model (ISAM) which used the content and process dimensions to integrate IT strategy and business strategy in Hong Kong companies. Their finding was similar to this study finding.

8.8 Conclusion

The main aim of this study is to find the effect of IT and business strategy in competitive advantage on Libyan oil companies. As it has been discussed in this chapter there was a high level of agreement and acceptance amongst the respondents to most statements suggested in this study. The findings of this study edified the important business and IT strategies that are used in Libyan oil companies, the important business strategy variables and IT strategy variables. Furthermore, it has developed the conceptual model of IT strategy and business strategy in these companies. This model is a contribution to the research on IT strategy, business strategy and business performance. It is related to how competitive advantage can be achieved. Furthermore, this model supported some of the other research models regarding to how IT strategy and business strategy can affect business performance but it illustrates further the way how these strategies can affect business performance.

CHAPTER NINE

CONCLUSION AND RECOMMENDATIONS

9.1 Introduction

The previous chapter presented the discussion of the main findings of this study in consonance with the data presented and analysed in chapter seven. This chapter provides a summary of the main findings and a discussion of a reconsideration of the research objectives. The contribution of this study to knowledge in theory and practice is also identified. The limitations of the study are outlined and followed by the recommendations and suggestions for further research.

9.2 Summary of the Main Findings

The main aim of this study was to investigate the strategic use of IT in Libyan oil companies, find the important variables of IT strategy and business strategy to build a conceptual model of IT strategy that may be of future use to identify and map possible competitive positions for future business IT development. In order to achieve this aim the study had undertaken a quantitative approach by using questionnaires as the main primary data collection method. According to the data analysed and discussed in the previous chapters, the main findings are concluded and summarised in the following sections:

9.2.1 Business Strategy

This study stated nine business strategies as the concepts of a holistic business strategy and found that production efficiency, quality services and intensive marketing are the significant business strategies presently in Libyan oil companies. Business strategy content dimensions were also considered in relation to business strategy goals, scope and competitive strategic orientation. In each content of business strategy the significant and important goals, scope and competitive strategic orientation were highlighted in relation to the view of the managers. Furthermore, the process dimensions were examined in relation to the organisational, individual and technological aspects of business strategy.

9.2.2 IT Strategy

This study examined seven issues of IT strategy concepts. It found that these companies treated the decision of IT investment independently; they used IT to solve medium to long term problems; their managers always aim to get most out of data technology; they strived to better manage IT resources; they were concerned to reach a greater level of integration of their system; they distributed the provision of IT facilities and support through the organisation and found that the primary benefits attempted to achieve through IT resulted in improved productivity and efficiency. This study identified the content and process domains of IT strategy. It found that most managers agreed with the content and process dimensions of IT strategy. The significant finding in this section is that there is support for an IT strategy from all

the nine business strategies studied. The important areas receiving support from the existing IT facilities in Libyan oil companies are pricing/cost reduction, product differentiation and production efficiency. The study also provides the important distinctive competences and organisational information quotient from IT contents and the analysis found that most of the participants used these contents in their IT strategy content in the companies studied. The process dimension was examined and highlighted the important organisational, individual, and technological aspects of business strategy process.

9.2.3 Business Performance

Business performance of the company was explored to understand the relationship between the IT and performance variables. The participants were in agreement with most of the indicators to evaluate business performance in their companies. They chose finance liquidity (cash flow) as the most important indicator to evaluate the performance of their companies followed by return on sales indicator. Based on these indicators this study attempts to find the impact of IT on business performance. The operational, management control, and strategic levels were used to find the relationship between IT and business performance. The conclusion was that the majority of participants see the operational impact of IT on the performance of the company as the most important impact; IT has proved to be a time saving speeding up of their tasks in these companies and IT has helped them to reduce the

administration costs. The other levels had less impact than the operational level. This leads to a conclusion that there is positive impact from IT on business performance

9.3 Reconsideration of the Research Objectives

In line with the aim of this research, there are eight objectives of this study. Each of these objectives has been met as follows:

1. Research Objective One: *To Examine the Use of Business Strategies (BS) in Libyan Oil Companies.*

The data collected and analysed on the first question of the second section of the questionnaire, as shown on the appendix 1, showed that production efficiency, quality services, and intensive marketing are the most important business strategies used in Libyan oil companies. The price reduction strategy was not considered as an important strategy in the companies studied. Therefore, the first objective has been achieved successfully.

2. Research Objective Two: *To Examine the Content and Process Dimensions of Business Strategy Used in Libyan Oil Companies.*

The data collected and analysed on the second, third, and fourth questions of the second section of the questionnaire, as shown in the appendix 1, implies that Libyan oil companies attempt to improve their performance and to become a leader in the oil industry in their business strategy goals. Their scope of business strategy includes diversifying into other business areas and expanding their business operations into

other countries or regions. The managers further identified the important competitive strategic orientation as higher operational efficiency which enables them to be more competitive by differentiating their products/services with better quality as one of the business strategy scopes and effective strategic alliance based on a forward looking and long term perspective.

Regarding to the process dimensions, the data analysed on the fifth, sixth and seventh questions of the second section of the questionnaire, as shown in the appendix 1, demonstrated that the managers on Libyan oil companies agreed with most of organisational, individual and technological aspects of business strategy aspects. This finding implies that the managers in the companies studied used the aspects of business strategy process. Therefore, the findings show that the objective was achieved.

3. Research Objective Three: *To Evaluate Use of Information Technology (IT) Strategy in Libyan Oil Companies.*

The data analysed on the first question of section three of the questionnaire, as shown in the appendix 1, showed that there are seven issues of the concepts of IT strategy in fourteen questions. The Libyan oil companies treated the decision of IT investment independently; used IT to solve medium to long term problems; gained the most of out of date technology; strived to better manage their IT resources; were concerned for the need of a greater level of integration of their system; distributed

the provision of IT facilities and support through the organisation and the primary benefits in an attempt to achieve through IT improved productivity and efficiency. This finding shows the use of IT on Libyan oil companies. Consequently, this objective was successfully achieved.

4. Research Objective Four*: To Analyse the Content and Process Dimensions of IT Strategy Used in Libyan Oil Companies.*

The data analysed on question two, three and four in section three of the questionnaire, as shown in the appendix 1, shows that the IT strategy supported most of the nine business strategies stated in the concept of business strategy section. The area receiving most support from the existing IT facilities in Libyan oil companies are pricing/cost reduction, product differentiation and production efficiency. The statements identified on the other two content of IT strategy distinctive competence and organisational information quotients were agreed by most of the managers in Libyan oil companies. The significant distinctive competence and organisational information quotient were identified. Therefore, these findings show that the objective was achieved.

The process dimensions determined and analysed on question five, six and seven in section three of the questionnaire, as embodied on the appendix 1, show that the organisational, individual and technological aspects of the IT strategy process were agreed by most of the participants in Libyan oil companies. The managers identified

the most important organisational, individual and technological aspects of IT strategy and appear to use these aspects in their IT strategy process dimension in Libyan oil companies. Therefore, the findings show this objective was achieved successfully.

5. Research Objective Five: *To Explore the Important IT Strategy Variables; Explore the Important Business Strategy (BS) Variables.*

The data analysed in the second part of section two and part two of section three of the questionnaire, as shown on the appendix 1, showed that the managers in Libyan oil companies see improving productivity, reducing cost and improving the front and back workplace as the important variables of business strategy. They identified the most important IT strategy variables as follows: reducing cost, reducing time, and improving quality and services. Consequently, this objective was met.

6. Research Objective Six: *To Discuss the Relationship between IT Strategy and Business Strategy.*

The data analysis in section two of the questionnaire in the second question, as shown on the appendix, showed that there are strong support from IT support to the most of the business strategy studied in this study especially pricing/cost reduction, product differentiation and product efficacy. This means that there are relationship between IT strategy and business strategy. Therefore, this objective achieved successfully.

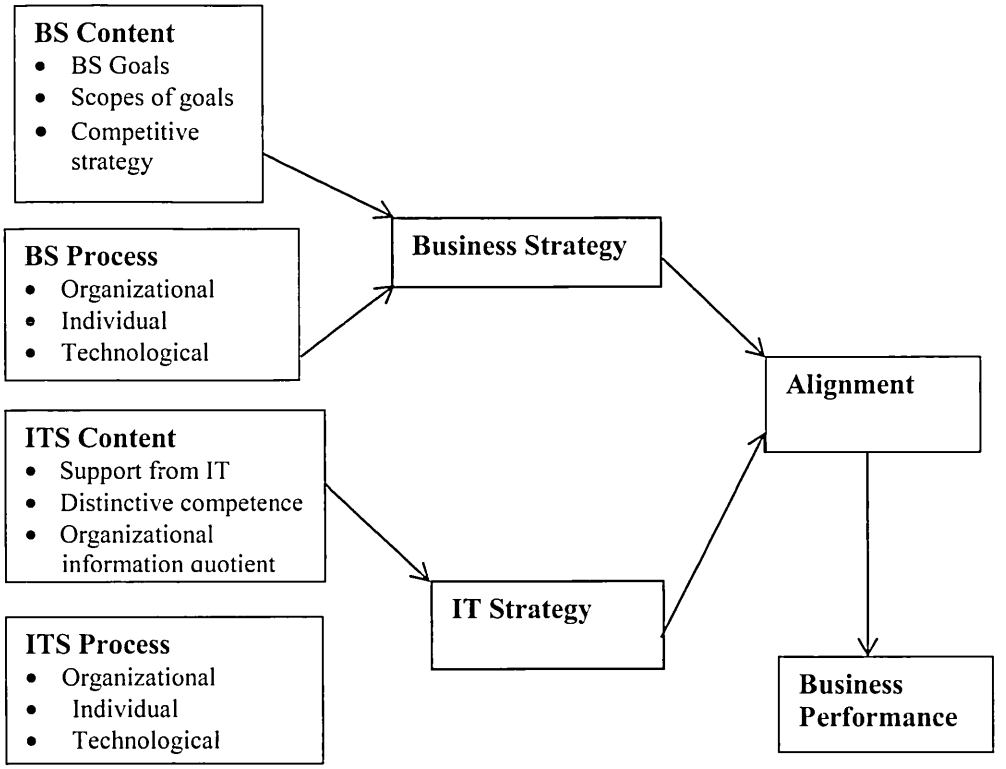
7. Research Objective Seven: *To Propose Ways How Information Systems Can Achieve A Competitive Advantage for the Oil Companies in Libya.*

The data analysed in section four of the questionnaire, as shown on the appendix 1, showed that the Libyan oil companies used financial measurements to evaluate business performance. The most significant indicators used in these companies are financial liquidity (cash flow) and return on sales. Regarding the impact of IT on business performance, this study supports the previous study. The findings indicated that there is a positive impact of IT on business performance. The most important level having impact from IT on Libyan oil companies was the operational level. IT allowed time saving/speeding up their tasks in these companies and IT helped them to reduce the administration cost. These findings imply that this objective was also met.

8. Research Objective Eight: *To Develop A Conceptual Model That May Help Libyan Oil Companies in Their Business in the Future.*

Based on the findings of this research this thesis has developed a conceptual model paying attention to the content and process domains of IT strategy and business strategy as shown in Figure 9.1 below.

Figure 6-1 Research Conceptual Model



Developed by The Author From The Analysis Of The Research Data

The model shown in Figure 9.1 clearly demonstrates the interactive nature between the content and process domains for business strategies, IT strategies, and organisational performance. It is a new model in studying IT strategy where business strategy and business performance relate to an achievement in competitive advantage. The finding from this research indicated that the positive impact on business performance should come from a higher order construct of the IT strategy or business strategy content and process. This can be perceived as the strategic alignment between of the elements of strategic important elements that have been operationalised as the important constructs in the content and process domains in

this research. These elements are the support and advantage offered by IT, distinctive competence, organisational information quotient, strategic goals, scope of strategy content, and competitive strategic orientation, added to the aspects of strategy process organisational, individual, and technological aspects.

9.4 Contribution to Knowledge

This study has made a contribution to knowledge in relation to the theory of information systems and competitive advantage and practice. These contributions are discussed in following sections:

9.4.1 Theoretical Contribution

This study has made a theoretical contribution to knowledge as explained below:

- This study contributed to the theory on IT strategy and competitive advantage because it is the first study conducted into Libyan oil companies. It raises and improves the understanding of the effect of IT on competitive advantage in Libyan oil companies.
- Based on the findings of this research this study has successfully contributed to the theory. It developed a model that pays attention to the content and process domains of IT strategy and business strategy. This model is a new model in the study of business strategy, IT strategy and business performance in relation to competitive advantage. The conceptual model may be used by

Libyan oil companies to help them in their future business operations. Also it can be helpful to other companies when using IT strategy and business strategy in their information system investments.

- This study is important because it not only studied the largest companies and the most important sector in Libya but also included the important issue of IT and competitive advantage which requires an understanding for effective management and successful business performance to achieve competitive advantage.
- Exploratory and confirmatory research has been conducted into the identification of IT strategy and business strategy content and process dimensions used in the adoption and diffusion of IT alignment. This has been accomplished with the identification of IT content and processes common to Libyan oil companies as one of the developing countries.
- The findings from this research would fill the knowledge gap between IS managers and business managers when IS managers are only concerned with development of information systems for the companies. However, business managers treat information systems as supportive tools in their business, with the main emphasis on efficiency and streaming of their business operations. They often surmise that by spending a sufficient amount of money on information systems, they should produce the chosen results needed. This study enable these managers to have better understanding of the dynamic similarity between IT and business strategies. The finding from this study

can be useful to the IT managers in selecting business sectors as well as the general business companies when they plan, develop and deploy their own IT strategy.

9.4.2 Practical Contribution

This study stressed the contexts in which developing countries such as Libya practise and has made a practical contribution discussed below:

- This study identified the content and process dimensions of IT strategy and business strategy used in Libyan oil companies. It helps the managers to understand these dimensions and how they can be used to achieve competitive advantage.
- The conceptual mode provided by this study can be used by Libyan oil companies to manage and control their IT strategy and business strategy to have maximum positive impact on their business performance to achieve competitive advantage. Also this model is eminently transferrable and can be used by other companies to gain competitive advantage by using IT strategy and business strategy dimensions.
- This study exposed different new facts and issues that need to be taken into account when studying the effect of IT on competitive advantage, and provides what needs to be done to improve and develop strategic information systems investment in Libyan oil companies and in other organisations in Libya and other developing countries.

9.5 Recommendations

In the light of the finding and conclusions referred to above, this study suggested some recommendations that may be adopted to improve IT strategy and business strategy dimensions aiding the achievement of competitive advantage. There are:

- In terms of business strategy, this issue needs to be discussed based on the objective of the production process rather than being subject to the viewpoints and personal aspects from the managers and employees.
- With regard to the content and process dimensions, this study found the important content and process dimensions of business strategy and IT strategy. It may be helpful in correlating these important dimensions with performance to find directly the impact of the dimensions on performance.
- This study found positive impact from IT on business performance stemming from both content and process dimensions. This point may need more consideration in order to find which has more impact, the content dimension or process dimension.

9.6 Limitation of the Study

The study was affected by some constraints which limited the research. These were:

- Generalisation limitation: The sample of the study has been restricted to all Libyan oil companies but no other. This makes it difficult to transfer the

findings of this study to other sectors in Libya due to the different environment and context as well as to different economic and structure factors.

- Length of the questionnaire: this study used a questionnaire of 19 pages with four sections of two parts in each section different numbers of questions. As a result, the questionnaire was lengthy and time consuming. Also it posed problems because of a considerable time was spent in data entering into SSP and in constructing the statistical tables.
- Difficulty in contacting the participants which included both top and middle managers. Problems stemmed from difficulty in contacting these managers at their level by email and in contacting them during this study.
- The political situation of Libya during the survey was one of the limitations that affected the time of research, conducting participants and distributing the questionnaires.

9.7 Suggestions for Further Research

This study has shed some light on some important points and questions that targeted a number of significant objectives and made an important contribution to knowledge. However, other questions were raised and explored during this research which requires answers by further research. In addition the limitation of this study could be viewed as an opportunity for further research. The following are some suggestions for of further study:

- This study was limited to Libyan oil companies therefore potentially limiting the generalisation of its findings beyond these companies. Further research in other sectors would provide more valuable information and provide opportunities to make a comparison between this research and subsequent studies.
- The present model from this study can inform further research on information strategies and on the strategic information systems and competitive advantage as well as developing this model and the variables used to achieve positive impact from IT strategy and business strategy on business performance.
- This study identified the effect of IT on business performance but there is a need to understand the extent to which the effect of IT on business performance is mediated through revenue growth and cost reduction resulting from such IT investment supporting a company to achieve the objectives of revenue growth and cost reduction.
- A comparative study between Libya and some of the UK oil companies and other developed countries oil companies would be also valuable.

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Appendices

Appendix 1

Dear Respondent

I am student in Abertay University Dundee. I am currently conducting a research in **"The effect of information systems on competitive advantage(s) in Libyan oil companies: a conceptual model for targeting strategic information systems investment"** for the degree of PhD.

The purpose of this research is to investigate strategic use of IT within Libyan oil companies with a view to conceptualise an investment model or framework that can be used to identify and map possible competitive positions for future business IT development.

This questionnaire will take approximately 15 to 20 minutes from your time to complete. Completion and return of this survey indicate voluntary consent to participate in this study. Please be assured that all information you provide will be kept strictly confidential. Your name or other identifying information will not appear on any study report – all results from this research will be reported as statistical summaries only.

Do not hesitate to call me if you have any questions or concerns about the questionnaire or any aspect of the research.

Yours sincerely

Mabroka Ahdidan

PhD student, Dundee Business School, Abertay University Dundee

[redacted]

[redacted]

Survey Questionnaire

Section one Participants' Background

We would have a better understanding if we know a little about your background. The following questions relate to your position and your experience, as well as other personal data.

1. What are your qualifications? ----------
2. How many years have you worked for the organization? ----------years
3. What's your position within your organization? ----------
4. How long have you been the current position? ----------years
5. Your gender

Male Female

Your age range is:

20-29

30-39

40-49

More than 49

Section Two Business Strategy

First:

Please assess the following statements that help understand the business strategy, are content, and the planning process. Then please indicate by circling the appropriate number on scale of 1 to 7 the extent to which you agree with each of the following statements:

Key of scale:

Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
1	2	3	4	5

1- We Attempt to be Ahead of our Competitors by:

Statements	Strongly Disagree	2	Natural	4	Strongly Agree
1. Low pricing of our products.	1	2	3	4	5
2. Quality products rather than price.	1	2	3	4	5
3. Our products are distinctively different from our competitors.	1	2	3	4	5
4. Introducing new products.	1	2	3	4	5
5. Offering a wide range of products.	1	2	3	4	5
6. Improve the efficiency of our production process.	1	2	3	4	5
7. Providing quality service to our customers.	1	2	3	4	5
8. Intensive marketing of our products.	1	2	3	4	5
9. Expanding into new markets.	1	2	3	4	5

2- Business Strategy Goals in the Company

Statements	Strongly Disagree	2	Natural	4	Strongly Agree
1. Clearly defined so that we know what we are aiming for.	1	2	3	4	5
2. Tend to focus on the prospect of becoming a leader in the industry.	1	2	3	4	5
3. Tend to focus on the prospect of continual improvement of business performance.	1	2	3	4	5
4. Tend to focus on the prospect of enhancing our corporate image with ethical business practice.	1	2	3	4	5

3- The Scope of Business Strategy Goals

Statements	Strongly Disagree	2	Natural	4	Strongly Agree
1. We are willing to diversify into other business areas when we have such an opportunity and are supported by the results of detailed analysis.	1	2	3	4	5
2. We consider vertical integration with our suppliers and/or distributors is an effective way to expand the scope of our business.	1	2	3	4	5
3. Expanding our business operations into other countries or regions is an effective way to enlarge our market share.	1	2	3	4	5
4. When we decide to diversify, we would first consider the possibility of acquiring another company in that business.	1	2	3	4	5
5. When we decide to outperform our competitors in market share, we would push to dominate even if this could mean reduced prices and profits.	1	2	3	4	5

4- Competitive Strategic Orientation.

Statements	Strongly Disagree	2	Natural	4	Strongly Agree
1. When we push to dominate, we are not deterred by the temporary reduction in net profits because we are confident that our actions are well supported by detailed studies and analysis.	1	2	3	4	5
2. We tend to perform detailed internal assessment for effective cost cutting and higher operational efficiency.	1	2	3	4	5
3. Higher operational efficiency enables us to be more competitive by differentiating our products/services with better quality.	1	2	3	4	5
4. We tend to form strategic alliance with our crucial business partners for effective cost cutting and efficient utilisation of resources.	1	2	3	4	5
5. We believe that effective strategic alliance should be based on forward looking and long term perspective and should not be deterred by short term fluctuations in economic environments.	1	2	3	4	5
6. In the time of economic downturn, we always strive to develop and introduce new products/services a step ahead of our competitors.	1	2	3	4	5
7. We always encourage and support our staff to generate innovative business and/or marketing ideas.	1	2	3	4	5

5- Organizational Aspects of BS in the Company

Statements	Strongly Disagree	2	Natural	4	Strongly Agree
1. We set up formal structure involving business managers and information technology (IT) professionals to define the goals and scope of our business strategy.	1	2	3	4	5
2. We have formal process/model involving business managers and IT professionals to assess whether the goals and scope of our business strategy are viable.	1	2	3	4	5
3. We have formal process/model involving business managers and IT professionals to evaluate the effectiveness of our business strategic plans.	1	2	3	4	5
4. Our formal business planning process/model speeds up new business initiatives with emergent market demand.	1	2	3	4	5
5. Our business strategy planning process is well documented so that we can learn from the past planning experience including success and failure cases.	1	2	3	4	5
6. The formal structure in our business strategy planning process enables us to systematically coordinate the various planning activities (e.g. environmental assessment, internal assessment, etc.) and ensure that they would lead to effective strategy formulation.	1	2	3	4	5

6- Organizational Aspects of BS in the Company continue

Statements	Strongly Disagree	2	Natural	4	Strongly Agree
1. The formal structure in our business strategy planning process enables us to formulate business strategies that are competent.	1	2	3	4	5
2. We provide continuous skill development for our staff in acquiring and developing the necessary knowledge and competence for the effective development of our business strategies.	1	2	3	4	5
3. When we plan our business strategy, we emphasise on the extent to which information technology/systems can actually help us in our business operations.	1	2	3	4	5

7-Individual aspects of business strategy

Statements	Strongly Disagree	2	Natural	4	Strongly Agree
1. Our planning team is organised in such a way so that individual team member is empowered to engage actively in the decision making process in various stages of strategy planning.	1	2	3	4	5
2. We depend on competent managerial skills so that the formulated business strategy plans can be implemented timely, smoothly and effectively.	1	2	3	4	5
3. When we plan our business strategy, we emphasise on the extent to which information technology/systems can actually help us in our business operations.	1	2	3	4	5

8 Technological Aspects of Business Strategy

Statements	Strongly Disagree	2	Natural	4	Strongly Agree
1. When we plan our business strategy, we emphasise on the extent to which information technology/systems, which can actually help us in our business operations.	1	2	3	4	5
2. When we plan our business strategy, we emphasise on the capabilities of information technology/systems, which can actually differentiate our product and/or services from our competitors.	1	2	3	4	5
3. The success of our business strategy planning depends very much on the support of the appropriate information systems architecture in providing essential data analysis, forecasting, simulation and processing.	1	2	3	4	5

Second:

Could you please choose from the following variables that you think it importance variables to make success in your IT strategies after that rank them in the order of importance from 1 to 6 using number 1 as the most important, 2 as the next most important, and so on:

Business Strategy Variables	**Select and Rank**
Reduce cost	
Improve productivity	
Deliver new products and services	
Generate new of revenue	
Improve front and back Workplace integration	
Focus on unified communications	

Section Three Information Systems Strategy

First:

Please assess the following statements in relation to IT decision making, strategic value, content of IT strategy, and the process of IT strategy. Then please indicate by circling the appropriate number on scale of 1 to 7 the extent to which you agree with each of the following statements:

Key of scale

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	4	6	7

1- The Concept of Information Systems Strategy

Statements	Strongly Disagree		Neutral		Strongly Agree
1- Each decision about a new IT investment is treated independently.	1	2	3	4	5
2- Decisions about IT investment are guided by a formal IT strategy.	1	2	3	4	5
3- We are concerned with using IT to solve short term problems.	1	2	3	4	5
4- We are concerned with using IT to solve medium to larger term problems.	1	2	3	4	5
5- We are concerned with matching the technology to our business needs.	1	2	3	4	5

Statements	Strongly Disagree		Neutral		Strongly Agree
6- We are concerned with getting the most up to data technology.	1	2	3	4	5
7- We are concerned with how to better manage our IT resources.	1	2	3	4	5
8- Managing information technology is not critical as managing other resources.	1	2	3	4	5
9- We are concerned for a greater level of integration of our systems.	1	2	3	4	5
10- The majority of our systems are standalone applications.	1	2	3	4	5
11- The provision of IT facilities and support is highly centralised.	1	2	3	4	5
12- The provision of IT facilities and support is distributed through the organisation.	1	2	3	4	5
13- The primary benefits sought of IT are improved productivity and efficiency.	1	2	3	4	5
14- Systems are justified on a wide range of benefits including the attainment of competitive advantage.	1	2	3	4	5

2- Support and Advantages Offered by Information Systems Strategy

Statements	Strongly Disagree		Neutral		Strongly Agree
1- Assist in reducing our costs.	1	2	3	4	5
2- Help us to distinguish our products from those of competitors.	1	2	3	4	5
3- Allow us to improve the quality of our products.	1	2	3	4	5
4- Enable us to introduce new products earlier than our competitors.	1	2	3	4	5
5- Help in improving the efficiency of our production process.	1	2	3	4	5
6- Enable our company to diversity our products.	1	2	3	4	5
7- Enable our company to provide quality customer service.	1	2	3	4	5
8- Enable us to embark on an intensive marketing of our products.	1	2	3	4	5
9- Assist us in identifying new markets	1	2	3	4	5

3-Distinctive Competence of IT

Questions	Strongly disagree		Neutral		Strongly agree
1- We tend to use information systems (IS) in a more effective way than our competitors to achieve the goals of our business strategy.	1	2	3	4	5
2- Our information systems are capable of providing various classes of information according to the needs at different management levels for operations and decisions.	1	2	3	4	5
3- The information systems in our company can provide crucial information to us to justify new business initiatives.	1	2	3	4	5
4- The strategic intent of our information systems is to support and strengthen our planned business initiatives.	1	2	3	4	5
5- The information systems used in our company can assist us in formulating new business strategies.	1	2	3	4	5
6- Our information systems effectively support us in expanding the scope of our business and in linking our suppliers and/or customers.	1	2	3	4	5
7- We prefer to build our own information systems by internal research and development involving IT professionals and business managers because the systems so designed can specifically support our business strategy.	1	2	3	4	5
8- We understand that information systems built with the states of the art technology in hardware, software and information communication can best support business strategies.	1	2	3	4	5

4-Organisational Information Quotient

Statements	Strongly disagree	2	Natural	4	Strongly agree
1. We recognise that the best design for our information systems can only be achieved by integrating the talents of our IT and business professionals.	1	2	3	4	5
2. The configuration of our information systems (i.e. database management systems, network systems, etc.) are designed to facilitate effective realisation of our planned business strategy.	1	2	3	4	5
3. We understand that effective business operations and only be run on information systems designed with proper, formal and secured procedures to ensure data security and integrity.	1	2	3	4	5
4. Within the constraints of our company resources, we always endeavour to set up cost effective information systems infrastructure in terms of software/hardware, network configurations, and administration procedures, etc. to support our business initiatives.	1	2	3	4	5
5. In order to establish the cost effective IT infrastructure to support our business initiatives, we do not exclude the choice from a series of options like: joint venture with another IT company, out sourcing part or whole of our IT functions, etc.	1	2	3	4	5

5-Individual Aspects of Information Systems Strategy Processes

Statements	Strongly Disagree	2	Natural	4	Strongly Agree
1. We depend on competent IT professionals and their managerial skills so that the formulated information systems plans can be implemented timely, smoothly and effectively.	1	2	3	4	5
2. Our decision on the degree of technical sophistication of our information systems is basically guided by the requirement of our business strategy and not the other way round.	1	2	3	4	5

6-Organizational Aspects of Information Systems Strategy Process

Statements	Strongly Disagree	2	Natural	4	Strongly Agree
1. We set up formal structure involving IT professionals and business managers to plan our information systems strategy.	1	2	3	4	5
2. We have formal planning process to assess whether the goals and scope of our information systems strategy are viable.	1	2	3	4	5
3. We have formal planning process to evaluate the effectiveness of our information systems plans.	1	2	3	4	5
4. Our information systems planning process is well documented so that our planning group can learn from the past planning experience including success and failure cases.	1	2	3	4	5
5. When we plan our information systems we carefully compare the strength and weakness of the available strategic options such internal development, out sourcing, joint ventures, etc.	1	2	3	4	5

7 Technical Aspects of Information Systems Strategy Process

Statements	Strongly disagree		Natural		Strongly agree
1. When we plan our information systems, we always explore the capabilities of information technology that can actually differentiate our product and/or services from our competitors.	1	2	3	4	5
2. The success of our business strategy planning depends very much on the support of the appropriate information systems architecture in providing essential data analysis, forecasting, simulation and processing.	1	2	3	4	5

Second:

Could you please choose from the following variables that you think it importance variables to make success in your IT strategies after that rank them in the order of importance from 1 to 12 using number 1 as the most important, 2 as the next most important, and so on.

Information Systems Strategy Variables	**Select and Rank**
Reduce time	
Reduce cost	
Increase company size	
Increase the growth of the company	
Increase competitive rivalry	
Increase profit level	
Increase ability to differentiate	
Increase market share	
Improve quality and services.	
Used new technology	
Increase brand strength	
Increase customer loyalty	

Section Four Company Performance Evaluation

Please assess the following statements that help us to learn how certain IT strategies influence performance of the company. Then please indicate by circling the appropriate number on scale of 1 to 7 the extent to which you agree with each of the following statements:

Key of scale:

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	2	3	4	5

Performance Indicators	Strongly Disagree		Neutral		Strongly Agree
relative to your industry's average or to comparable organisations, what is, in your opinion, the performance of your company in regard to the following criteria:					
Long-term profitability	1	2	3	4	5
Sales growth rate	1	2	3	4	5
Finance liquidity(cash flow)	1	2	3	4	5
Operating profits before financing and taxation	1	2	3	4	5
Long-term profitability	1	2	3	4	5
Return on sales	1	2	3	4	5
Overall business performance	1	2	3	4	5

Questions	Strongly Disagree		Neutral		Strongly Agree
What do you think are the impacts of IT on your company for the past three years? Pleas indicate your level of agreement with each statement of impact are flowed:					
The introduction of computers has reduced our administration cost.	1	2	3	4	5
The company has improved its image since it has been using computers.	1	2	3	4	5
IT has helped this company with time saving/speeding up our tasks.	1	2	3	4	5
IT has improved the quality of decisions in this company.	1	2	3	4	5
IT has helped this company achieve better internal integration.	1	2	3	4	5
IT has helped this company to better compete with our competitors.	1	2	3	4	5

Thank you for your help

Appendix 2

السلام عليكم ورحمة الله وبركاته...

تقوم هذه الدراسة بمحاولة بحث تاثير نظم المعلومات على والميزة التنافسية في الشركات النفطية الليبية: محاولة بناء نموذج مفاهيمي للمساعدة في توجيه إستراتيجية الإستثمار في تكنولوجيا المعلومات وذلك من ضمن متطلبات الحصول على الدرجة الدقيقة الدكتوراة في إدارة الأعمال للطالبة مبروكة عبدالله حديدان الخفيفي الدارسة حاليا في جامعة أبرتي داندي (Abertay Dundee) في المملكة المتحدة.

تهدف هذه الدراسة إلى دراسة الإستخدام الإستراتيجي لتكنولوجيا المعلومات في الشركات الليبية العاملة في قطاع النفط مع محاولة عرض نموذج مفاهيمي لإستراتيجية نظم المعلومات المستخدمة في هذه الشركات والذي يمكن أن يستخدم في تحديد الموقف التنافسي لتطور تكنولوجيا المعلومات المستخدمة في الأعمال التجارية في المستقبل.

مرفق مع هذه الرسالة الإستبيان الخاص بالدراسة والذي يمكن أن يستغرق من 15-20 دقيقة للإجابة على الأسئلة المكونة له حيث أنه يتكون من أقسام مختلفة تتعلق بمجالات البحث في الدراسة أنشد مساعدتكم بالتكرم بلأجابة على هذه الاسئلة ، إن مشاركتكم في هذه الدراسة سيكون لها الأثر الكبير في تحقيق الهدف من هذه الدراسة ، علما بأن كل المعلومات التي ستدلون بها ستعامل بسرية تامة ولن يتم إستخدامها في إلا لاغرض البحث العلمي فقط.

نقدر تعاونكم معنا ومساهمتكم في هذه الدراسة بتخصيص جزء من وقتكم الثمين للإجابة على أسئلة استمارة الإستبيان،وتقبلو خالص تحياتنا

الباحثة: مبروكة عبدالله حديدان

كلية الإدارة

جامعة أبرتي- داندي- سكوتلندا

المملكة المتحدة

القسم الأول من الأستبيان : المعلومات الشخصية

الجزء الأول من الإستبيان يتضمن أسئلة تتعلق ببعض البيانات عن الحياة الوظيفية والشخصية للمستبان التي يمكن أن تساعد الباحث في أن يحصل على نتائج اكثر وضوحا وتفصيلا من هذه الدراسة.

1. المؤهل الدراسي _____

2. عدد السنوات التي قضيتها في العمل في هذه الشركة _____
3. مركزك الوظيفي الحالي في الشركة _____
4. عدد السنوات التي قضيتها في مركزك الوظيفي _____
5. الجنس

ذكر أنثى

6. مدى العمر بالسنوات

29-20

30-39

40-49

أكثر من 49

القسم الثاني من الإستبيان : إستراتيجية الأعمال التجاري

أولا:

هذا القسم من الإستبيان يحتوي على أسئلة ذات علاقة بالمتغيرات التي تساعد على فهم إسترتيجية العمل في الشركة ومحتواها وعملية التخطيط و التي من شأنها أن تساعد الباحث على تحديد أهم المتغيرات لإستراتيجية الأعمال التجارية في الشركة.

لذا نأمل منكم الإجابة على الاسئلة التالية وذلك بوضع دائرة على الرقم المناسب المقابل لكل سؤال بإستخدام المقياس الموضح في أعلى الجدول والذي يبداء من 1 الي 5.

المقياس المستخدم:

غيرموافق بشدة	غير موافق	محايد	موافق	موافق بشدة
1	2	3	4	5

1. نحن نسعى أن تكون شركتنا على رأس الشركات المنافسة وذلك باتباع سياسة:

الاستراتيجية المتبعة	غير موافق بشدة		محايد		موافق بشدة
1. تخفيض أسعار منتجاتنا.	1	2	3	4	5
2. إنتاج المنتج بجودة عالية بغض النظر عن السعر.	1	2	3	4	5
3. إنتاج منتجاتنا بحيث تكون مختلفة ومتميزة عن منتجات الشركات المنافسة.	1	2	3	4	5
4. إنتاج منتجات جديدة.	1	2	3	4	5
5. عرض منتجاتنا بشكل موسع.	1	2	3	4	5
6. إستمرار عملية تطوير كفاءة عمليات الأنتاج.	1	2	3	4	5
7. تزويد المستهلك بخدمات جيدة.	1	2	3	4	5
8. كثافة تسويق منتجاتنا.	1	2	3	4	5
9. زيادة النمو عن طريق التوسع في أسواق جديدة.	1	2	3	4	5

2. أهداف إستراتيجية العمل في الشركة

الاهداف	غير موافق بشدة		محايد		موافق بشدة
1. تحدد بوضوح دائما وبالتالي نعرف الأهداف التي نسعى إلي تحقيقه .	1	2	3	4	5
2. تميل إلي التركيز على إحتمال أن تكون أعمالنا رائدة في الصناعة.	1	2	3	4	5
3. تميل إلي التركيز على إمكانية الاستمرار في تطوير العائد من العمل.	1	2	3	4	5
4. تميل إلي التركيز على إمكانية تحسين صورة الشركة مع الممارسات التجارية الاخرى.	1	2	3	4	5

3. مجالات اهداف استراتيجية العمل في الشركة

المجالات	غير موافق بشدة		محايد		موافق بشدة
1. نحن على إستعداد لتوسيع أعمالنا في مجالات أخري عندما نحصل على فرصة متاحة تكون مدعومة بنتائج واضحة ومفصلة.	1	2	3	4	5
2. نحن نعتبر التكامل الرأسي مع الموزعين و/أو الموردين وسيلة فعالة لتوسيع نطاق العمل.	1	2	3	4	5
3. توسيع نطاق أعمالنا في مناطق أو بلدان أخرى تعتبر طريقة فعالة لتوسيع حصتنا في السوق.	1	2	3	4	5
4. عندما نقرر التنويع في الشركات التي نستخدمها في أعمالنا فاننا أولا نقوم بإيجاد شركات أخري بديلة قبل التغيير.	1	2	3	4	5
5. قرار التفوق في الحصة السوقية يجعلنا نستخدم جميع قوتنا من أجل ذلك حتى ولو كان ذلك عن طريق تخفيض الأسعار والأرباح.	1	2	3	4	5

4. التوجه الاستراتيجي للعمل التنافسي في الشركة

التوجوهات الاستراتيجية	غير موافق بشدة		محايد		موافق بشدة
1. سياسة السعي للهيمنة على السوق لا يوقفه الأنخفاض المؤقت في صافي الدخل لأننا على ثقة بأن الأجراءات التي نتخذها تعتمد على دراسات وتحليلات سابقة مفصلة.	1	2	3	4	5
2. نحن نميل إلى اجراء تقييم داخلي مفصل لخفض التكاليف وزيادة الكفاءة التشغيلية.	1	2	3	4	5
3. زيادة الكفاءة التشغيلية يتيح لنا ان نكون اكثر قدرة على المنافسة وذلك بأنتاج منتجات/ خدمات مختلفة مع تحسين النوعية.	1	2	3	4	5
4. نحن نميل إلى نموذج التحالف الإسترتيجي مع شركاتنا في الأعمال لخفض التكاليف وكفاءة استخدام الموارد.	1	2	3	4	5
5. نحن نعتقد أن التحالف الاستراتيجي الفعال ينبغي أن يقوم على النظر إلي الامام ويقوم على المنظور طويل الاجل ولا توقفه التقلبات قصيرة الاجل في البيئة الاقتصادية.	1	2	3	4	5
6. في زمن الانكماش الاقتصادي نحن نسعى دائما إلي تطوير منتجاتنا وإطلاق منتجات / خدمات جديدة قبل الشركات المنافسة.	1	2	3	4	5
7. نحن دائما نشجع موظفينا على الإبتكار والإبداع في الأعمال و/ أو تسويق الأفكار الإبداعية.	1	2	3	4	5

5. الجوانب التنظيمية لعمليات إستراتيجية العمل في الشركة

الجوانب التنظيمية	غير موافق بشدة		محايد		موافق بشدة
1. نحن ننشئ البنية الرسمية في الشركة بحيث تشتمل على مديري الأعمال ومتخصصين في تكنولوجيا الأعمال (IT) لتعريف الاهداف ونطاق إستراتيجية العمل في الشركة.	1	2	3	4	5
2. نحن لدينا عمليات/نموذج رسمي يعمل على جعل المدراء والمتخصصين في تكنولوجيا الأعمال (IT) يشاركون في تقييم مدى إستمرارية الأهداف ومجالات إستراتيجيتنا في العمل أو مدى حاجتها إلي التغيير.	1	2	3	4	5
3. نحن لدينا عمليات/نموذج رسمي يعمل على جعل المدراء والمتخصصين في تكنولوجيا الأعمال (IT) يشاركون في تقييم فعالية خططنا الإستراتيجية التجارية.	1	2	3	4	5
4. عملية التخطيط الرسمي في الشركة تعمل على المساعدة في تسريع عمليات/نموذج المبادرات التجارية الجديدة مع الطلب في السوق الناشئة.	1	2	3	4	5
5. إستراتيجيتنا في عمليات التخطيط موثقة بشكل جيد حتى إنه يمكننا التعلم من تجارب التخطيط السابقة بما في ذلك حالات النجاح والفشل.	1	2	3	4	5
6. الهيكل الرسمي في إستراتيجتنا التجارية في عملية التخطيط يمكننا من تنسيق أنشطة التخطيط المختلفة (التقييم البيئ مثلا، تقييم داخلي،الخ) بشكل منتظم والتأكد من إنها سوف تؤدي إلي صياغة إستراتيجية فعالة.	1	2	3	4	5
7. الهيكل الرسمي في إستراتيجتنا التجارية في عملية التخطيط تمكننا من وضع إستراتيجيتنا للأعمال بشكل متخصص.	1	2	3	4	5
8. نحن نعمل على تنمية المهارات لموظفينا بشكل مستمر لمساعدتهم على إكتساب وتنمية المعرفة لديهم لضمان كفاءة التطوير لإستراتيجيتنا التجارية بشكل فعال.	1	2	3	4	5
9. عندما نخطط إستراتيجيتنا التجارية نؤكد على قدرات تكنولوجيا المعلومات/ النظم المستخدمة التي تمكن من جعل منتجاتنا/ الخدمات تكون متميزة.	1	2	3	4	5

6. الجوانب الفردية لعمليات إستراتيجية العمل في الشركة

الجوانب الفردية	غير موافق بشدة		محايد		موافق بشدة
1. طريقة تنظيم المجموعة المسئولة عن التخطيط في الشركة تتيح الفرصة لكل عضو في هذه المجموعة أن تكون له الفرصة في المشاركة بنشاط في صنع القرار في مختلف مراحل التخطيط الإستراتيجي.	1	2	3	4	5
2. نحن نعتمد على المهارات الإدراية المختصة في التنفيذ والتي تمكن من تنفيذ خطط إسترتيجية العمل المصاغة في الوقت المناسب وبسلاسة وفعالية.	1	2	3	4	5
3. عندما نخطط إسترتيجيتنا التجارية نؤكد على مدى تكنولوجيا المعلومات/ النظم التي يمكن أن تساعدنا فعلا في عملياتنا التجارية.	1	2	3	4	5

7. الجوانب التقنية لعمليات إستراتيجية العمل في الشركة

الجوانب التقنية	غير موافق بشدة		محايد		موافق بشدة
1. عندما نخطط إسترتيجيتنا التجارية نؤكد على قدرات تكنولوجيا المعلومات/ النظم المستخدمة التي تمكن من جعل منتجاتنا/ الخدمات تكون مختلفة عن الشركات الأخرى المنافسة.	1	2	3	4	5
2. عندما نخطط إسترتيجيتنا التجارية نؤكد عل قدرات تكنولوجيا المعلومات/ النظم المستخدمة والتي تمكنا فعلا من جعل منتجاتنا /خدمات تتميز عن المنافسين.	1	2	3	4	5
3. نجاح عمليات التخطيط لإستراتيجية العمل لدينا يعتمد كثيرا على البنية التحتية المناسبة لنظم المعلومات لتزويدنا بالتحليل المناسب للبيانات و التنبواءات وتسهيل العمليات.	1	2	3	4	5

ثانيا:

المتغيرات التالية تعتبر متغيرات ذات أهمية عالية للمساعدة على تحقيق النجاح في تنفيذ الإستراتيجية التجارية في الشركة لذلك نأمل منكم أختيار أهم هذه المتغيرات بالنسبة إليكم ومن ثم ترتبها على حسب الأهمية إبتداء من رقم 1 الي رقم 6 حيث أن الرقم 1 يعطى للمتغير الأكثر أهمية ومن ثم رقم 2 للمتغير الذي يليه في الاهمية وهكذا إلي نهاية المتغيرات.

متغيرات إستراتيجية الاعمال التجارية	الاختيار و الترتيب
تخفيض التكاليف	
تحسين الانتاجية	
تقديم منتجات وخدمات جديدة	
خلق عائد جديد	
تحسين التكامل في العمل داخل الشركة	
التركيز على الاتصالات الموحدة	

القسم الثالث من الاستبيان : متغيرات إستراتيجية نظم المعلومات

أولا:

هذا القسم من الاستبيان يحتوي على أسئلة ذات علاقة بالمتغيرات التي لها علاقة بإستراتيجية نظم المعلومات المستخدمة في الشركة والمتغيرات التي لها علاقة بصنع القرارات الخاصة بتكنلوجيا المعلومات والقيمة الإستراتيجية و مكونات إستراتيجية تكنولوجيا المعلومات و التي من شأنها أن تساعد الباحث على تحديد أهم المتغيرات لإستراتيجية تكنولوجيا المعلومات.

لذا نأمل منكم الاجابة على الاسئلة التالية وذلك بوضع دائرة على الرقم المناسب المقابل لكل سؤال بإستخدام المقياس الموضح في أعلى الجدول والذي يبداء من 1 الي 5.

المقياس المستخدم

غيرموافق بشدة	غير موافق	محايد	موافق	موافق بشدة
1	2	3	4	5

1. مفهوم إستراتيجية تكنولوجيا المعلومات المستخدمة في الشركة

الاسئلة	غير موافق بشدة		محايد		موافق بشدة
1. قرار أي إستثمار جديد في تكنولوجيا المعلومات يعامل بشكل مستقل.	1	2	3	4	5
2. القرارات المتعلقة بالإستثمار في تكنولوجيا المعلومات تسترشد بإستراتيجة تكنولوجيا المعلومات الرسمية.	1	2	3	4	5
3. إستخدام تكنولوجيا المعلومات في حل المشاكل في المدى القصير تجعلنا قلقين من النتيجة .	1	2	3	4	5
4. إستخدام تكنولوجيا المعلومات في حل المشاكل في المدى المتوسط إلى المدى الطويل تجعلنا قلقين من النتيجة .	1	2	3	4	5
5. نحن نشعر بالقلق من امكانية مطابقة هذه التكنولوجيا مع إحتياجات العمل.	1	2	3	4	5

الاسئلة	غير موافق بشدة		محايد		موافق بشدة
6. نحن نشعر بالقلق من الحصول على أقصي درجة من البيانات عن هذه التكنولوجيا.	1	2	3	4	5
7. إدارة تكنولوجيا المعلومات ليست صعبة وحاسمة كإدارة الموارد الاخرى.	1	2	3	4	5
8. نحن نشعر بالقلق حول كيفية إدارة موارد تكنولوجيا المعلومات لدينا بحيث تكون بشكل أفضل.	1	2	3	4	5
9. نحن نشعر بالقلق من أجل مستوى أعظم للتكامل لأنظمتنا المستخدمة.	1	2	3	4	5
10. غالبية أنظمة تكنولوجيا المعلومات المستخدمة في الشركة ذات تطبيقات مستقلة.	1	2	3	4	5
11. توفير الخدمات والدعم من تكنولوجيا المعلومات شديد المركزية.	1	2	3	4	5
12. توفير الخدمات والدعم من تكنولوجيا المعلومات موزع من خلال الشركة.	1	2	3	4	5
13. الفوائد الأساسية التي تسعى إليها تكنولوجيا المعلومات هي تحسين الأنتاج والكفاءة.	1	2	3	4	5
14. النظم المستخدمة تتسم بعدة مزايا والتي تشمل الميزة التنافسية.	1	2	3	4	5

2. الدعم والمزايا التي تقدمها نظم تكنولوجيا المعلومات المستخدمة لإستراتيجية العمل في الشركة

الاسئلة	غير موافق بشدة		محايد		موافق بشدة
1. تساعد في الحد من التكاليف.	1	2	3	4	5
2. تساعد على تمييز منتجاتنا عن منتجات الشركات المنافسة.	1	2	3	4	5
3. تسمح لنا بتحسين جودة منتجاتنا.	1	2	3	4	5
4. تسمح لنا بطرح منتجات جديدة في وقت سابق للشركات المنافسة.	1	2	3	4	5
5. تساعد في تحسين عملية كفاءة الإنتاج في بلدنا.	1	2	3	4	5
6. تمكننا من تنويع منتجاتنا.	1	2	3	4	5
7. تمكننا من تقديم خدمة ذات جودة عالية للمستهلك.	1	2	3	4	5
8. تسمح لنا بالدخول بمنتجاتنا إلي أسواق مكثفة.	1	2	3	4	5
9. تساعدنا في تحديد أسواق جديدة.	1	2	3	4	5

3. مدى كفاءة تكنولوجيا المعلومات المستخدمة في الشركة

الاسئلة	غير موافق بشدة		محايد		موافق بشدة
1. نميل إلي إستخدام نظم المعلومات لدينا بطريقة أكثر فعالية من الشركات المنافسة لتحقيق أهداف إستراتيجيتنا التجارية.	1	2	3	4	5
2. نظم المعلومات لدينا قادرة على توفير فئات مختلفة من المعلومات المناسبة للأحتياجات في المستويات الإدارية المختلفة واللازمة لمختلف العمليات والقرارات.	1	2	3	4	5
3. نظم المعلومات لدينا قادرة على تقديم معلومات حاسمة تساعدنا في تبرير المبادرات التجارية الجديدة.	1	2	3	4	5
4. الغرض الإستراتيجي لنظم المعلومات في شركتنا هو دعم وتعزيز مبادرات الأعمال المخطط لها.	1	2	3	4	5
5. نظم المعلومات المستخدمة في شركتنا يمكن أن تساعد في صياغة إستراتيجيات جديدة للأعمال التجارية.	1	2	3	4	5
6. فعالية نظم المعلومات لدينا تعمل على دعمنا في توسيع نطاق أعمالنا وأيضا تساعد في الربط بين الموردين و/ أو الزبائن.	1	2	3	4	5
7. نحن نفضل بناء نظم المعلومات لدينا عن طريق البحوث الداخلية والتنمية بإستخدام الموظفين والمتخصصين في تكنلوجيا المعلومات ومديري الأعمال لكي تساعد في دعم إسترتيجيتنا التجارية.	1	2	3	4	5
8. نحن ندرك أن بناء نظم المعلومات عن طريق الدول التي لديها أحدث ماتوصلت إليه التكنولوجيا في الاجهزة والبرامج ومعلومات الإتصال أفضل طريقة لدعم إسترتيجيات الأعمال التجارية.	1	2	3	4	5

4. التقسيم التنظيمي لنظم المعلومات المستخدمة في الشركة

الاسئلة	غير موافق بشدة		محايد		موافق بشدة
1. إن افضل تصميم لنظم المعلومات يمكن الحصول عليها فقط عن طريق دمج المواهب التي لدينا في تكنولوجيا المعلومات مع المتخصصين المهنيين في الأعمال.	1	2	3	4	5
2. نظم المعلومات لدينا صممت على أساس إنها تساعد في تيسير تحقيق إستراتيجيتنا المخطط لها بفاعلية.	1	2	3	4	5
3. نحن ندرك أن فعالية الأعمال التجارية تكون فقط إذا شغلت على نظم معلومات مصممة بالإجراءات السليمة والرسمية والمضمونة لضمان سلامة وأمن البيانات.	1	2	3	4	5
4. نحن دائما نسعى إلي إنشاء البنية التحتية لنظم المعلومات بشكل فعال من حيث تكلفة البرامج/الأجهزة ومكونات شبكة الأتصال والأجراءات الإدارية وغيرها حسب الموارد المتاحة لدعم مبادرات الأعمال في الشركة.	1	2	3	4	5
5. لإنشاء بنية تحتية فعالة لتكنولوجيا المعلومات ،لدينا مجموعة من الخيارات مثل إنشاء مشروع مشترك مع شركة تكنولوجيا أخري ، مصادر جزئية أو كلية من وظائف تكنولوجيا المعلومات لدينا، الخ.	1	2	3	4	5

5. الجوانب الفردية لعمليات إستراتيجية نظم المعلومات المستخدمة في الشركة

الاسئلة	غير موافق بشدة		محايد		موافق بشدة
1. إننا نعتمد على التمتخصصين في تكنولوجيا المعلومات ومهاراتهم الإدراية حتى نتمكن من تنفيذ خطط نظم المعلومات الموضوعة في الوقت المناسب وبسلاسة وفعالية.	1	2	3	4	5
2. قراراتنا الخاصة بالتطوير التقني لنظم المعلومات تسترشد بشرط إسترتيجيتنا التجارية وليس العكس.	1	2	3	4	5

6. الجوانب التنظيمية لعمليات إسترتيجية نظم المعلومات المستخدمة في الشركة

الاسئلة	غير موافق بشدة		محايد		موافق بشدة
1. نحن ننشئ البنية الرسمية بحيث تشمل متخصصين في تكنولوجيا المعلومات ومديري الأعمال لتخطيط إسترتيجية الأعمال للشركة.	1	2	3	4	5
2. عمليات التخطيط الرسمية لدينا تسمح بتقييم الأهداف والمجالات لإستراتيجيتنا المعدة لنظم المعلومات من حيث الجودة والاستمرارية وأمكانية تعديلها.	1	2	3	4	5
3. عمليات التخطيط الرسمية لدينا تسمح بتقييم فعالية خططنا المتعلقة بنظم المعلومات.	1	2	3	4	5
4. عملية التخطيط لنظم المعلومات في الشركة موثقة بشكل جيد بحيث يمكن الاستفادة منها في التخطيط في الشركة بما في ذلك تجارب النجاح والفشل.	1	2	3	4	5
5. عندما نقوم بالتخطيط لنظم المعلومات لدينا تجرى مقارنة دقيقة لنقاط الضعف والقوة للخيارات الإستراتيجية المتاحة مثل التنمية الداخلية، من المصادر، والمشاريع المشتركة.	1	2	3	4	5

7. الجوانب التقنية لعمليات إستراتيجية نظم المعلومات

الاسئلة	غير موافق بشدة		محايد		موافق بشدة
1. عندما نقوم بالتخطيط لنظم المعلومات نقوم دائمابإستكشاف قدراتنا في تكنولوجيا المعلومات والتي تميز منتجاتنا و/أو خدماتنا عن الشركات المنافسة.	1	2	3	4	5
2. نجاح عملية التخطيط لنظم المعلومات لدينا تعتمد بشكل كبير على مدى إمكانية دمج البنية التحتية لنظم المعلومات مع أعمالنا التجارية وذلك بتوفير تكنولوجيا المعلومات المناسبة لتحليل البيانات وإدارة قاعدة البيانات ودعم إتخاذ القرار والقيمة المضافة على المنتجات والخدمات.	1	2	3	4	5

ثانيا:

المتغيرات التالية تعتبر متغيرات ذات أهمية عالية للمساعدة على تحقيق نجاح إستراتيجية نظم المعلومات في الشركة لذلك نأمل منكم أختيار أهم هذه المتغيرات بالنسبة إليكم ومن ثم ترتبها على حسب الأهمية إبتداء من رقم 1 الي رقم 12 حيث أن الرقم 1 يعطى للمتغير الأكثر أهمية ومن ثم رقم 2 للمتغير الذي يليه في الأهمية وهكذا إلي نهاية المتغيرات.

متغيرات إستراتيجية نظم المعلومات	الخيار والترتيب
تقليل الوقت	
تخفيض التكلفة	
زيادة حجم الشركة	
زيادة النمو في العمل	
زيادة التنافس في الشركة	
زيادة مستوى الربح	
زيادة القدرة على إختلاف المنتجات في الشركة	
زيادة الحصة السوقية	
تحسين نوعية الخدمة والجودة	
إستخدام تكنولوجيا جديدة	
زيادة قوة العلامة التجارية	
زيادة ولاء المستهلك	

القسم الرابع من الاستبيان: تقييم أداء الشركة

هذا القسم من الاستبيان يحتوي على أسئلة ذات علاقة بالمتغيرات التي تساعدنا على معرفة كيف تؤثر بعض إستراتيجيات تكنولوجيا المعلومات في أداء الشركة التي من شانها أن تساعد الباحث على تحديد أهم المتغيرات لاستراتيجية تكنولوجيا المعلومات التي تؤثر على أداء الشركة. لذا نأمل منكم الاجابة على الاسئلة التالية وذلك بوضع دائرة على الرقم المناسب المقابل لكل سؤال بإستخدام المقياس الموضح في أعلى الجدول والذي يبداء من 1 الي 5.

المقياس المستخدم:

غيرموافق بشدة	غير موافق	محايد	موافق	موافق بشدة
1	2	3	4	5

1. قياسا إلى متوسط الصناعة الخاصة بك أو بمنظمات مماثلة، ما هو رأيكم في أداء الشركة التي تعمل بها وفقا للمعايير التالية:

المعايير	غير موافق بشدة		محايد		موافق بشدة
1. ربحية الشركة في المدى الطويل	1	2	3	4	5
2. معدل نمو المبيعات	1	2	3	4	5
3. السيولة المالية(التدفق النقدي)	1	2	3	4	5
4. أرباح التشغيل قبل التمويل والضرائب	1	2	3	4	5
5. العائد على المبيعات	1	2	3	4	5
6. العائد الكلي للعمل	1	2	3	4	5

2 ماهي الأثار المترتبية على الشركة من إستخدام تكنولوجيا المعلومات خلال الثلاث سنوات الماضية وفقا للعوامل التالية :

العوامل	غير موافق بشدة		محايد		موافق بشدة
1. إستخدام الحاسب الألي أدى إلى خفض التكاليف في الشركة.	1	2	3	4	5
2. تحسن مستوى الشركة نتيجة لإستخدام أجهزة الكمبيوتر.	1	2	3	4	5
3. تكنولوجيا المعلومات تساعد الشركة على الإسراع في أداء مهامها وإتمامها في الوقت المناسب.	1	2	3	4	5
4. تكنولوجيا المعلومات تساعد على تحسين نوعية القرارات المتخذة في الشركة.	1	2	3	4	5
5. تكنولوجيا المعلومات تساعد على تحقيق تكامل داخلي أفضل في الشركة.	1	2	3	4	5
6. تكنولوجيا المعلومات تساعد على التنافس بشكل جيد مع الشركات المنافسة.	1	2	3	4	5

كل الشكر على حسن تعاونكم وجزاكم الله خيرا على ذلك

Appendix 3

Dundee Business School Research Projects (Students) – Application for Ethical Approval

For Ethics Committee Use Only			Indicate section(s) where corrective action is required	
First Submission				
Reviewer 1	Indicate Decision : Accept Reject		Section 1	Section 5
	Initials :	Date :	Section 2	Section 6
Reviewer 2	Indicate Decision : Accept Reject		Section 3	Section 7
	Initials :	Date :	Section 4	
Second Submission				
Reviewer 1	Indicate Decision : Accept Reject		Section 1	Section 5
	Initials :	Date :	Section 2	Section 6
Reviewer 2	Indicate Decision : Accept Reject		Section 3	Section 7
	Initials :	Date :	Section 4	

Prior to the completion of the Ethics Form you must read the documents: "Ethical Review Procedure' and "Research Ethics Sub-Committee Remit"
(https://portal.abertay.ac.uk/portal/page/portal/University/Schools/DBS/SchoolAdmin)
There is also a 'Quick Guide to Ethics Procedures' on the same site.

Name of Student: **Mabroka Ahdidan**	Registration Number: [redacted]
Name of Supervisor: **Sabin Hotho**	Module Code:

SECTION ONE: Nature of the research

1.1 Project Title and Aim

Proposed Title of Project: The Effect Of Information Technology On Competitive Advantage On Libyan Oil Companies: A Conceptual Model Targeting Strategic Information Systems Investment

Main Aim of Study:

The aim of the study is to investigate the strategic uses of IT within Libyan oil companies with the view to conceptualize an investment model or framework; that can be used to identify and map possible competitive positions for future business IT development.

For Ethics Committee use Only	Researcher provides a clear statement of the aim of the study?	Yes ☐ No ☐
	Action required:	

1.2 Is your research to be based solely on a review of literature and/or secondary data, i.e. without any fieldwork or off campus activity?

Yes ☒ No ☐

If YES

then go directly to Section 7

(You need submit only this page and Section 7)

SECTION TWO: Research method

2.1 Will your research involve the use of questionnaires, interviews, surveys, observation or other instruments or methods intended to collect data from or about people?

Yes ☒ No ☐

If NO, please explain your research in detail, then proceed to Section Four

(attach a separate page if necessary)

2.2Who are the intended research participants?

(Please indicate approximate numbers)

2.3 How will you recruit / contact your research participants?

I will visit the Libyan's oil companies and meet them

2.4. What is your intended research site?

8 *i.e. where will research be conducted, what type of organisation/facility, etc.*

Libyan's oil companies

9 *(attach a separate page if necessary)*

2.5-What is your overall research approach? Please tick relevant boxes

Qualitative	**Yes** ☒	**No** ☐
Quantitative	**Yes** ☒	**No** ☐
Survey (using questionnaire)	**Yes** ☐	**No** ☐
Will you be talking directly with your research participants?	**Yes** ☒	**No** ☐
Observation – overt (open observation)	**Yes** ☐	**No** ☐
Observation – covert (concealed observation)	**Yes** ☐	**No** ☐

2.6- If your research method is not covered in the above, please explain in detail the method that you will be using

Questionnaire and Interview

(attach a separate page if necessary)

For Ethics Committee use Only	Section 2: Data collection methods are clearly identified?	Yes ☐ No ☐
	Action required:	

SECTION THREE: General Ethical Issues

You indicated at 2.1. above that your research will involve the use of questionnaires, interviews, surveys or other instruments or methods intended to collect data from or about people. As a result, your research raises automatically the following general ethical issues

Informed consent voluntary participation out by participants confidentiality anonymity of participants privacy of participants.

The normal protocol for addressing these issues requires the researcher to undertake certain activities, as specified at 3.1 to 3.9 in the table below.

Please place your initials against each and every item in the table, to indicate that you will comply with this protocol.

If you feel that you are unable to comply with an item in this protocol, please explain in detail, on a separate sheet, why you are unable to comply with that item and how you propose to address the underlying ethical issue addressed by the item.

		Initial
3.1	I agree to provide the participants with a written/oral explanation of the project and the uses to which any data will be put	x
3.2	I confirm I will explain to the research participants that I am a student and undertaking degree studies	x
3.3	I confirm that I will explain to the research participants that they may not benefit from my study, except to the extent to see summary results of the study if requested.	x
3.4	I confirm that the subject will be made aware of the length of time it will take to gather data e.g. fill in a questionnaire etc.	
3.5	I confirm that I will explain to participants that their participation is voluntary.	x
3.6	I confirm that I will offer to the research participants the opportunity to decline to take part in any part of the research activity. Participants, for example, may decline to answer a particular question in a questionnaire.	
3.7	I confirm that I will offer to my research participants the opportunity to withdraw at any stage, and explain to them how data will be withdrawn that pertains to them.	x
3.8	I confirm I will offer to my research participants a guarantee of confidentiality, including commercial confidentiality where appropriate and if required	x
3.9	I confirm I will offer to my research participants a guarantee of anonymity	

You should discuss with your supervisor how you will ensure that you can provide, if required, evidence that you complied with the above protocol.

For Ethics Committee use Only	Protocol will be observed for addressing general ethical issues?	Yes ☐ No ☐
	Action required:	

SECTION FOUR: Additional ethical issues

4.1- In your research, could any of the procedures adopted cause any form of harm (including discomfort, stress, anxiety or embarrassment) to the participants?

Yes ☐ No ☒

If YES, please provide, on a separate sheet, details of

4.1.1 The potential harm to participants,
4.1.2 Measures proposed to minimize the impact of such harm, and
4.1.3 How you propose to inform participants of the potential risks to them and to secure their consent to participate under those conditions

4.2- Will you be collecting 'personal data', i.e. anything (such as a name, address, phone number or description) which could allow a third party to identify participants in your research?

Yes ☐ No ☒

If YES, please provide, on a separate sheet, details of how you will comply with the requirements of applicable data protection legislation

4.3- Will your research involve any other ethical issues, in addition to those identified in Section 3 and Questions 4.1 and 4.2 above?

Yes ☐ No ☒

If so, tick all relevant boxes below and explain on a separate sheet how you will address each and every issue ticked.

☐ financial or other form of reward for participation ☐ vulnerable people, e.g. children, juveniles, patients, those in care, those with only elementary English language, or with learning difficulties etc. ☐ people in custody or engaged in illegal activities ☐ cross cultural issues (e.g. language, images, content, etc.) ☐ sensitive topics (e.g. drugs, sexual orientation, ethnicity, age, political/religious beliefs, euthanasia, poverty, or conflict situations, etc.)	☐ offensive issues – i.e. race, colour, creed, etc. ☐ use of audio or video recorded materials ☐ legal issues (e.g. criminal records) ☐ media coverage ☐ reputation of the University ☐ **Other** (please provide full details, using a separate sheet if necessary)

For Ethics Committee use Only	Question of additional ethical issues has been addressed in a satisfactory manner?	Yes ☐ No ☐
	Action required:	

SECTION FIVE: Risk Assessment

This section is concerned with risk to **you**, the researcher. It is **not** concerned with risk to research participants; that topic is considered at question 4.1 above.

Risk is defined by reference to the potential physical or psychological harm, discomfort or stress that the research project might generate for **you**. You must consider if you are: working alone, in unsatisfactory working conditions, potential harassment situations, working in vulnerable situations or if your research will involve overseas travel, etc.

You must complete this section for you to obtain ethical approval.

Note that it is not acceptable to simply enter "no risk" in the table below. If you believe that there is no risk of any harm to you, you must explain why not. For example, if you are conducting a survey, with all the survey work being conducted on-campus, make a statement to that effect.

10 IDENTIFED RISK (harm, hazard, things that need 'control', e.g. potential incident/accident, exposure to dangerous situations)	**Control Measures to Reduce the risk and/or Action to be taken in Emergency**
	Use a separate sheet if necessary

For Ethics Committee use Only	Risk Assessment has been addressed in a satisfactory manner?	Yes ☐ No ☐
	Action required:	

SECTION SIX: Declarations

		Initials
6.1	I confirm that I have read and understood the School's Ethical Review Procedure document and Quick Guide to Ethics Procedures	x
6.2	I confirm I understand the need for Data Protection and undertake to abide by the regulations.	x
6.3	I confirm that the health and safety of the researcher has been taken into consideration prior to the commencement of the research.	x

Student Signature Mabroka Ahdidan
Date:28.02.2011.....

The research Supervisor signs to indicate that the researcher has 'considered' appropriate ethical issues and their own safety. The supervisor is not attesting to the adequacy of such consideration, merely that the student has confirmed that ethical issues and issues of personal safety have been considered by the student.

Supervisor Signature .....
Date:.....

SECTION SEVEN

To be completed ONLY if the research is to be based solely on a review of literature and/or secondary data, i.e. without any fieldwork or off campus activity

7.1- Can you guarantee that your research will involve only literature review and/or desk research, i.e. without any fieldwork or off campus activity?

Yes ☐ **No ☐**

7.2- Have you read and understood the School's Research Ethics Committee's "Ethical Review Procedure", "Research Ethics Sub-Committee Remit", and 'Quick Guide to Ethics Procedures'?

Yes ☐ **No ☐**

7.3- Can you guarantee that you will comply with the University's policy on Academic Deceit?
https://portal.abertay.ac.uk/portal/page/portal/University/Schools/DBS/School Admin

Yes ☐ No ☐

Student Signature ..... *Date:* .....

Supervisor Signature ..... *Date:*.....